A

# TREATISE

ON

# CHELTENHAM WATER.

AND ITS GREAT USE IN THE PRESENT

## PESTILENTIAL CONSTITUTION:

WHEREIN ALSO

Its Nature and Effects are compared with thoſe of ſome Mineral Waters of the ſame Claſs, and others of a different Kind.

THE WHOLE BIENG ILLUSTRATED BY

CASES CORRESPONDENT TO EACH.

BY

JOHN BARKER.

Sumite materiam veſtris, qui ſcribitis, æquam
Viribus: et verſate diu, quid ferre recuſent,
Quid valeant humeri: Hor. de Arte Poetica.

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### ERRATA.

Page 4, line 7, from top, for *diſprove*, read *diſapprove*.
—— 25, — 16, dele ſemicolon and *but*.
—— 26, — 5, from top, for *eperient*, read *aperient*.
—— 49, — 9, ——, for *Seidlitz*, read *Sedlitz*.
—— 59, — 8, ——; dele period, and put a comma.

THE

# THE PREFACE.

THERE is no man, I preſume, that has tolerably competent ideas of, or any juſt pretenſions to ability in phyſic, who is not ſenſible that, to perfectly underſtand, or have a clear inſight into the nature of Mineral Waters, entertain proper notions of their powers, and be able to preſcribe them with judgment and preciſion, requires the greateſt degree of medical knowledge and ſagacity.—*Frederic Hoffman*, in his time, complained, and not without reaſon, of the men who uſed to preſcribe at Mineral Springs, and of their writings upon them. In the courſe of the following Treatiſe, I ſhall have ſomething to ſay that nearly concerns the intereſts of phyſic, in regard of theſe and other weighty matters. In fact, that no mean ſhare of abilities is neceſſary to obtain ſuch great objects is evident enough: it being a matter confeſſed on all hands, that no one, even among thoſe moſt eminently diſtinguiſhed in this way, has arrived at ſo high a point of knowledge, as to be able to give the world a good treatiſe upon Mineral Waters; mankind

being, even yet, left to lament the want of ſuch a *Deſideratum* in Phyſic.

And though ignorance, in a matter of ſuch importance, muſt undoubtedly, at firſt ſight, appear very culpable in a period of the world ſo advanced, and, as it were, in the very declenſion of time; yet we ſhall the leſs wonder at it, when we conſider this ſubject is of a very complex nature, which involves within itſelf, great knowledge, both natural and medical.

In regard of knowledge in general, nothing is more unfriendly to its intereſts, than becoming idolaters of men and their opinions, and believing it reſides in them before they have it. And the reaſon why ſo few go on to great attainments is, that moſt of thoſe who are naturally able, are not willing to proceed, in the improvement of the good knowledge of preceding ages. Hence ſome become the inventors of new ſyſtems, and others the patrons and blind followers of them. The pride of man is ever at work; ſome new faſhion reigns; the various branches of knowledge are not equally cultivated; but ſome are had in preference, if not excluſion of the reſt. By theſe means the generality of men are confounded in their ſtudies; they take plauſible opinions for real truth, till they gradually loſe all native ſimplicity of mind. But it would be eaſier to teach a peaſant taken from the plough, than a mind corrupted with falſe ideas adopted from others, and full of the parade of learning, without the power of it.

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A moſt nice diſcernment, and a great capacity original, is neceſſary to diſtinguiſh truth from error—a qualification inherent only in great minds, and always connected with, if not reſulting from, true ſimplicity. To theſe are to be added, ſtrict attention, obſervation, and reaſon; but not too cloſe an application without due reliefs. For knowledge is ſo great a being, a ſubject of a nature ſo infinitely extenſive, that the progreſſive ſteps of mortals, or rather its progreſs in the mind of man, are, and muſt be gradual. But, under ſuch circumſtances, and ſo directed, the ſoul is of ſo capacious a nature, that it is by no means eaſy to define the bounds of its excurſions. Learned men have attempted to do this, but without effect. It is perpetually adding knowledge to the ſtock already acquired, and going on to greater things; and, like the ſacred ladder, when once mounted, we are ſtill proceeding: the whole range of creation, and even the ſpiritual world itſelf, become the objects of our enquiries and contemplation;—we riſe from natural things to ſpiritual, and deſcend again to natural; till we at length wholly direct our courſe to the latter, and riſe from earth to heaven.

Among all the Tracts which have at various times been written on the ſubject before us, *Hoffman*'s is in general eſteemed the beſt. Though a chemiſt himſelf, as *Short* has well obſerved, he is the leaſt affected with their jargon. And, though a friend to chemical analyſes, he, at the ſame time, was ſo diſſatisfied with this common me-

thod of getting a knowledge of mineral ſprings, and ſo ſenſible of its defects, that he gives it for one of the principal cauſes of the erroneous opinions which prevailed concerning them. *Short* wonders at this; and, on this account, accuſes him of inconſiſtency: but *Short* had not the notions, nor genius of *Hoffman*.

Now, though I diſprove not of the uſe of chemical methods, in aſcertaining the groſſer contents of waters; for, as hath been well obſerved, chemiſtry is certainly a good ſervant to phyſic, though a very bad maſter; yet, when I reflect on the very imperfect knowledge which hath been hitherto obtained in this way; that it is apt to miſlead weak minds, and excite their attention more to the conſideration of waters in a decompounded, than in a natural ſtate; and withal, that better knowledge is to be had from obſervations made on the taſte, ſmell, and effects of waters, at leaſt in regard of their moſt ſubtile parts; when all this is duly weighed, I cannot help conſidering a chemical analyſis with *Hoffman*, in aſcertaining the qualities and powers of mineral ſprings, as greatly defective; and concluding, with *Boyle*, a perfect analyzation of waters to be impracticable, and the knowledge to be drawn from it, at beſt, to be very imperfect.

We can determine, thereby, it is true, there is ſteel in a water; we are ſenſible of the ſame by the taſte: but can we determine by the former the ſubtlety of that ſteel? By chemical experiments we can perhaps prove there is ſulphur;

ſulphur; we know in general it exiſts by the ſmell: but will chemical experiments better determine the degree of volatility in that ſulphur, than obſervations made upon other proofs?

If, as *Short* ſays, and I think is evidently in ſome meaſure true, the mineral ſpirit hath its ſeat, and exerts its powers, at leaſt frequently, if not, as he ſays, chiefly in ſulphur; though a fine elaſtic air be the ſubtle medium, whereby this, and a chalybeate ſpirit, that exiſts in any water, are raiſed; the being duly aware of the exquiſite or leſſer degree of fineneſs in theſe parts muſt be of the greateſt conſequence, in forming right notions of the powers of mineral ſprings, and making proper diſtinctions between them.

The properties of ſulphur, or ſomewhat very like them, may exiſt in ſome waters, though it be not really and ſubſtantially, or eſſentially preſent; and where it is, though it be hardly diſcoverable by experiment or obſervation; and after a more powerful mode, than if it exhibited itſelf to the eye in a palpable form. But chemical proceſſes are as far from being capable of giving us due notions of their exquiſite nature, as preparations of iron are from reſembling the chalybeate ſpirit. And yet our having due notions of both will perhaps tend more to our forming right ideas of the nature and powers of mineral ſprings, than even ocular inſpection itſelf of the very pro-

ceſſes of their preparation in the bowels of the earth, could we deſcend thither for that purpoſe.

The natural hiſtory of Mineral Waters ſtill is, and probably ever will remain imperfect. Experiments themſelves, it is well known, have not greatly accelerated the progreſs of knowledge in this branch of ſcience, nor given it a due degree of ſtability. And yet we cannot poſſibly conceive, that the Creator did not intend the nature of ſuch excellent things, in the proper uſe of which the health and well being of mankind are ſo eſſentially concerned, ſhould not have been better known long before this time. The ſole conſideration of this is ſufficient to ſhew, that men in general have miſtaken the true road, and been walking in bye-paths. And the fact is, that better knowledge is to be had from other quarters not yet well explored: which, when joined with accurate notions of the cauſes of the diſeaſes, and the various temperaments of the air, will give juſt ideas of the external application and nice internal uſe of mineral ſprings, which is the thing wanted. The principles and proceſſes of chemiſtry may indeed throw ſome light upon the great works of the Creator: but to ſuppoſe that they are able to lay them wholly open to our view, elucidate things of ſo high a nature, and enable us to imitate them, is a groſs miſtake, the crude conception and immature production of a deluded mind.

There are ſpecific properties in almoſt every mineral water, wherein it differs from every other of the ſame

claſs. Nay, there are qualities in the water, and even in the ſpirit of every common ſpring, whereby it is peculiarly different, in many reſpects, from all others. But as a chemical analyſis will not enable us to determine the peculiar difference of the one; ſo is it as little capable, in many caſes, of ſhewing properly, and in all reſpects, and in matters of great conſequence too, wherein conſiſts the ſpecific difference of the other. It may aſſiſt us indeed in forming ſome, though imperfect notions, of the nature of the groſſer contents of waters; but their ſpirit is too fine and volatile in its nature, ſubtlety, and powers, to lie ſufficiently open to ſuch proofs. In fact, this common beaten tract, I am fearful, has been too often traverſed, ever to expect, from continuing in it, effects in any degree conſiderable and important.

The chief excellence of *Hoffman*'s work conſiſts in this, that, like a great naturaliſt, an able phyſician, and a wiſe man, he conſiders common water as the great baſis of the wonderful virtues and healing powers of thoſe waters called mineral. And, if we properly conſider the matter, faithfully attend withal unto the ſacred verities, and duly meditate upon them; nay, if we only attend unto the ſalutary uſes of water, and the great concern it has in the ſupport and health of the whole animal world, we ſhall certainly find there is a great deal of truth in his notion.

To take then our firſt ideas of the healing powers of waters from the higheſt ſource we can, the great fountain

of all knowledge, not only ſacred or divine, hiſtorical, political, and judicial, but alſo, in ſome meaſure, even that which is natural or phyſical; from that upon which we may thoroughly depend, and from whence we may be able to derive true notions in their greateſt force. If we examine then the ſacred writings, we ſhall find, that, though there was an undoubted miraculous interpoſition in the caſe of the *Syrian*; though the waters of *Jordan*, to which he was ſent by the prophet, in preference to all others, were a type of thoſe more ſalutary ſprings which ſhould afterwards ariſe in that land of promiſed bleſſings, and from thence flows into all countries for the healing of the nations; for the reſtoring the ſoul and its moral capacities; yet that moreover, under the ſame figure, the ſalutary effects of water naturally uſed were alſo indicated; and that the words, *waſh and be clean*, contain this latter ſenſe, will appear fully evident to every accurate obſerver.

Numerous other paſſages alſo ſtrongly convey this ſame ſecondary ſenſe. And though theſe ſacred intimations relate chiefly to the external uſe of water; yet, from thoſe, and others which declare its tendency, when drank, to increaſe the ſtrength of the body, to promote longevity, as well as ſerenity of mind, and to give it freedom and power of action, fine notions may be taken of its excellencies in this reſpect alſo.

Being therefore neceſſarily bound by my ſubject to enquire into the nature of common and ſpring water, before I can

I can regularly treat of the Mineral Water at *Cheltenham*, I ſhall now proceed to examine, after a phyſical manner, into their properties, as well as effects, both internally and externally uſed.

But, before I do this, give me leave to obſerve, that, if we wiſh to obtain a better knowledge of mineral ſprings, and to treat of them in a natural, eaſy, and perſpicuous manner, we muſt lay aſide, at leaſt in a great meaſure, the parade of learning and the uſe of terms; revert back to ſimple principles, and take nature as ſhe is: not compare her eaſy, yet powerful methods of preparation too much to the modes of, nor her preparations themſelves to thoſe obtained by, a proceſs chemical; nor think to gain a proper knowledge of the two former, by taking our ideas merely from the latter, or ſubmitting matters to its proofs: not be over-fond of ſubjecting her great works to be examined, nor farther than is neceſſary, by the fiery trial of a chemical inveſtigation; nor affectedly pretend to imitate or reſtore them by the works of art: a weakneſs common to many ages, an error peculiarly prevalent in this! we ſhall then be able to treat of theſe things with a ſimplicity neceſſary to a ſubject of ſo high a nature and quality, and ſo great deſerts.

In the preſent allowed defective ſtate of the knowledge of mineral ſprings, I need not make an apology for an attempt to improve it. And, as I cannot therefore

fore highly compliment any of the Medical Gentlemen of the preſent age, nor even thoſe who have lived in ages preceding, my Treatiſe muſt be left to make its way in the world, under favour of its own genuine truth and natural ſimplicity; and theſe, if I judge aright, will be its moſt proper recommendation.

A TREATISE

A

# TREATISE

ON

# CHELTENHAM WATER.

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## *Of Common Water, and its great Uſes.*

WATER is one of the four material principles called by natural philoſophers *elements**. We know little more of it, than that it is a body naturally fluid un-

* Profeſſor STAHL, and others, have been of opinion, that water is not an element, but only a fluid kind of earth. On the contrary, an eminent natural philoſopher of the preſent times ſays, that it may be prepared from two kinds of air, and is reducible again into them. Although his obſervations ſhould be fallacious, as is the caſe but too frequently even with experiments themſelves, there is no doubt that matter by heat, motion, and friction, undergoes very great changes, and takes on different appearances. If we attend to the nature of the atmoſphere in hot climates, we ſhall find the vapours that ariſe from the earth are therein ſo highly ſubtilized by the power of the former, as to take on them even an ætherial nature while the heat continues, and afford no ſigns of a vaporiſh air till the ſeaſon when the annual rains come on. And from electric experiments it is certain, that the particles of air and light, though not inert, at leaſt in a more inactive ſtate before, may ſoon become exquiſitely ſubtile; take upon them an ætherial nature, and be endued with a ſurprizing power and active energy, like that of lightning. So that it is difficult to ſay, what is truly elementary, ſince all the elements conſiſt of matter more groſs or ſubtile, and differently divided, modified, or combined.

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der a certain degree of warmth; apparently uniform in its compoſition, though not really ſo, conſiſting of parts more or leſs fine that evaporate with a gentle heat, and mixed in general more or leſs, with fine particles of various kinds of earth. More or leſs elementary heat enters into it; which, with motion, and a due degree of warmth in the atmoſphere, keep it fluid the greateſt part of the year; at leaſt in the habitable parts of the world. It is alſo endued with a principle called *principium inflammabile*, whereby light or fire becomes fixed and reſident in it, and a part of its compoſition; and air is its proper ſpirit: which preſerves its purity, enlivens its nature, and is chiefly concerned in giving it a fine, cooling, agreeable, and refreſhing taſte; particularly that which runs briſkly in the ſhallow ſtreams of rivers. Whereas that which is deep, has leſs motion, or ſtagnates, is diſpoſed to heat, ferment, grow foul, and throw up a yellowiſh green ſcum to the top, eſpecially towards the autumnal ſeaſon.

The fluidity of water, and its other qualities, naturally diſtinguiſh it from earth, whatever its component parts may be; which will probably ever remain in a great meaſure unknown: and upon them the baſis of the great virtues even of mineral waters ſtands. For the uſes of common water are ſo great and admirable in mixing with the food, promoting digeſtion, and the preparation of the chyle; in cooling, diluting, and purifying the blood; encouraging and regulating circulation and ſecretion; and in bracing the ſolids and reſtoring and confirming the ſtrength of the body; that, by this wholeſome, cool,

and

and refreſhing beverage, the whole animal world is in a great meaſure ſupported and preſerved. And the water in rivers, in particular, forms the beſt cold bath in the world: their channels affording room for due exerciſe of the body in ſwimming, and their waters themſelves being powerful in conſtringing the ſolids, yet temperate; not violent and inordinate in their effects.

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## *Of Spring Water, its natural Preparation, fine Spirit, and Uſes.*

BEFORE we can treat properly of Mineral Springs, it is neceſſary we ſhould have true and adequate notions of the natural ſpirit, powers, and excellent qualities of the water of common ſprings.

When vapours ariſe by heat and rarefaction from the ſea, lakes, ponds, rivers, and the whole ſurface of the earth when moiſt, the ſubtile particles of elementary heat, and of air, alſo an elementary, as well as elaſtic body, capable of rarefaction and expanſion, and, in a certain degree, alſo of confinement and compreſſion, aſcend with them. To theſe may be added a ſubtile principle, or ſulphureous vapour *, the effluvia of bodies vegetable and animal, &c.

* Sulphureous vapours certainly ariſe from the earth, or are formed by a combination of the inflammable principle with an acid in the air, in which we know they exiſt.

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From theſe vapours, when they are condenſed in the air, and fall down again upon the earth, are ſtrained through it, and paſs through its cool veins, ariſe the chief ſupplies to ſprings. And whatever alterations the water ſuffers in its paſſage, or what particles ſoever it may be deprived of, it ſtill retains a native and vital principle of warmth in ſome degree, or acquires the latter by motion, and the attenuation of its parts; as is obſervable in the ſmoaking of ſprings during the cold weather in winter, when the external air condenſes the vapours ariſing from them.

As to the air that is in water, in its paſſage through the earth it is cooled, elaborated by motion, and refined; and in this more active and expanſive ſtate confined alſo and compreſſed by the water, and the great weight and power of the earth itſelf. Whence, by its action outwards on the one hand, and the great preſſure and mighty action again upon it on the other, it is reduced to a ſtate called by natural philoſophers fixed. But, for the ſake of perſpicuity, I ſhall call the aerial ſpirit attenuated, or elaborated air compreſſed, as it conveys a more true and proper idea of its natural preparation.

The particles of the water itſelf alſo are refined by motion and agitation; its body cooled and purified. Though, as it paſſes through gravel and ſand, or through ſtrata of marl, or fat earth, and over beds of clay, it carries away ſome fine particles, which become intimately mixed with it; whence alſo it acquires, in various degrees, an hard or ſoft quality and taſte.

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The whole natural proceſs, and more eſpecially that concerned in the preparation of warm mineral waters, is analogous to what happens in the œconomy of the animal ſyſtem, in the depuration and purification, mixture, motion, elaboration, refinement, and exaltation, compreſſion and perfecting of the blood, juices, and animal ſpirits, in the various orders of veſſels in the body. For there is a more near or diſtant reſemblance in many of the works of the Creator.

By means of theſe natural proceſſes, and in proportion to the powers really exiſting and acting, the particles of which water is compoſed are more or leſs divided, ſubtilized, and perfected; its body duly mixed, purified, and refined: which, with the fine qualities inherent in its well elaborated and greatly compreſſed ſpirit, give it, eſpecially in ſome ſprings, a fine, light, genuine, pure, cool, briſk, agreeable, and refreſhing taſte; in others, one more heavy, groſs, rough, and harſh: a light wholeſome, and moſt excellent nature; and, in regard of the ſpring itſelf, one alſo ſpecific and original. Thus, as it is the moſt ſimple, ſo it alſo becomes one of the fineſt beverages in the world. Its diluting, ſolvent, reſtoring and ſtrengthening powers are very great. But it ought always to be drank freſh from the ſpring-head, becauſe of the expanſive nature of its ſpirit, and the effects of the rarefaction of the external air, which diſpoſe the finer parts, as well as thoſe of mineral ſprings, immediately to fly off.

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By its diluting and ſolvent qualities, and the powerful action of its fine ſpirit, it becomes greatly inſtrumental in digeſtion, and preparing and conveying the chyle into the blood; in properly diluting and cooling it: in diſſolving highly ſubtilized and acrid animal ſalts, mixing with viſcid juices, and carrying both off by the proper emunctories: in promoting inſenſible perſpiration, regulating that, and all the diſcharges of the body; and in ſtrengthening the ſolid parts. In fine, the effects attending drinking it alone, without bathing, are great and admirable, in regard of all the functions natural, vital, and animal; and in preſerving, as well as reſtoring health, and giving new life and vigour to the whole ſyſtem.

The virtues of *Malvern* Waters depend upon theſe principles, and their own great purity: for there is no ſalt of any kind, or but a very ſmall proportion, to be found in them. *St. Winifred*'s well, in Flintſhire, is another of the ſame kind, though only uſed as a Bath. And there is one near the place wherein I live, that in lightneſs, purity, fine taſte, and all the excellencies of ſuch a water, is not inferior to either of them.

If medical gentlemen had well conſidered the excellent nature and properties of the aerial ſpirit in common water, a ſpirit ſo fine, that no efforts can reſtore, nor art even imitate, without deſtroying the fine taſte and pure nature of the water; had they withal well attended to the nature of the animal œconomy, and had a proper knowledge of the nature of the animal ſpirits and the nervous ſyſtem,

ſyſtem; they would hardly have thought of preferring rain water, which is effœte and vapid to this. Much leſs would they have thought of diſtilled water for a ſubſtitute of a more excellent nature, though lighter; which not only looſes all natural ſpirit, but alſo contracts a foul taſte in its preparation. Yet this error *Hoffman*, and even *Hippocrates* himſelf fell into, through falſe reaſoning, and want of due obſervation. In fact, men in general are too apt to think only of and dwell upon particular matters in any thing. But if we wiſh to underſtand any ſubject well, we muſt always take into good conſideration all its parts, without which we never can become maſters of it.

In fine, the excellent nature and fine properties of ſpring water ſtand in direct oppoſition to the bad qualities of brandy, and other ſpirits of that kind: which heat the ſtomach and vitiate the juices, render the blood tenacious, contract, dry, and harden the ſolids; and are as pernicious in their nature, as they are unnatural in their preparation and compoſition, however tempered or diluted. Water, in fact, is a kind of univerſal remedy that ſtands before all others. It is not only uſeful in diluting, waſhing, and purifying the blood; it brings the body back to a ſtate of temperance, and renews our ideas of it: and, joined with cool bathing properly uſed, braces the nerves, reſtores vigour, confirms ſtrength, eſtabliſhes health, and preſerves the juſt equilibrium of the body.

The author of this treatiſe himſelf is greatly and principally, under Providence, indebted to the drinking ſpring water, exerciſe on horſeback, and the uſe of river-bathing, for a ſurprizing recovery from a nervous atrophy of many years ſtanding, and almoſt, if not in its laſt ſtage, when all attempts by medicine failed, or even did miſchief. And a gentleman, who lived pretty freely in his younger days, and had ſuch violent epileptic fits as threatened his life, by drinking water and uſing exerciſe, without much bathing, gradually got the better of his fits, and is now in good health, ſtrength, and ſpirits, though eighty years of age.

The ancients in the eaſt had ſuch juſt notions of the excellent nature of ſprings, that they held them in a degree of eſteem bordering upon veneration. And even in later ages in the weſt, many fine ſprings had their tutelary ſaints.

Before I finiſh theſe obſervations upon water, give me leave to take notice, that its refreſhing and ſtrengthening powers are ſo great that they are alluded to in numerous fine paſſages of holy writ: and in a peculiar one are uſed, by way of figure, to repreſent the ſpiritual powers even of Meſſiah himſelf: namely, in that beautiful pictureſque deſcription, wherein he is metaphorically ſaid to receive refreſhment and a confirmation of ſtrength from it, in the following plain, but extraordinary words:

*He ſhall drink of the brook in the way; therefore ſhall he lift up his head.*

We

We mortals all grow weary in the great journey of life; our ſtrength at times declines: very thankful, therefore, ought we all to be to the great Donor for ſuch excellent gifts, without which, even in health we could not ſubſiſt; much leſs in ſickneſs, in a peſtilential conſtitution like the preſent, when burning fevers rage, thirſt is ſo great, and the calls of nature ſo preſſing, that nothing will ſatisfy the ſick but cold ſpring water. The nature of which, by reaſon of its ſimple taſte, its great excellence, we are in health but too apt to deſpiſe. Nor are we brought to a better knowledge, till we are made ſenſible of the great diſtreſs we ſhould be in if we were in want of it.

Brute creatures, who are not endued with reaſon, nor have the uſe of language, cannot indeed give thanks and offer praiſe to their Maker for the benefits they receive; but there is one who has done it for them: where, ſpeaking of the Almighty in his works of creation and providence, in a fine, pictureſque, beautiful, and ſublime deſcription, he ſays, that "he ſendeth the ſprings into "the rivers which run among the hills;" that "they "give drink to every beaſt of the field; and thereof the "wild aſſes quench their thirſt."

*Of the Mineral Spring at Cheltenham, and the excellent Nature and Compoſition of its Water.*

HAVING already treated of common ſpring water, and its compreſſed elaſtic ſpirit, I ſhall have the leſs to ſay here of the parts of this kind, which enter into and are the great baſis of the Cheltenham, as well as all other mineral waters: and ſhall therefore only obſerve of its mineral chalybeate ſpirit, that, however prepared from iron earth by a native vitriolic ſpirit, and raiſed by the aerial ſpirit, it is ſtill farther elaborated, intimately incorporated, and perfected by motion, and rendered more powerful alſo by compreſſion and confinement.

This admirable mineral ſpring, if it does not take its riſe, is probably prepared or perfected in ſome of the hills about Cheltenham; as it is reaſonable to ſuppoſe thoſe of Bath and other places are in the hills that are near them. Its aqueous particles appear by the taſte to be fine and light; its elaſtic ſpirit greatly attenuated, ſubtle, active, briſk, powerful, and predominant; eſpecially as joined with its mineral qualities. And withal, the water, though ſtrongly impregnated with ſaline parts, poſſeſſes a natural, mild, pure, and even to many palates an agreeable taſte; as is the caſe with all fine mineral waters in their original ſtate.

Though

Though it may be neceſſary, in ſome meaſure, to aſcertain the nature and qualities of the groſs contents and ſaline properties of mineral waters, to have recourſe to an analyſis; yet nothing ſhews its inſufficiency, and the great uncertainty of the knowledge too often pretended to be drawn from its experiments, than that ſo great a naturaliſt, and ſo good a chemiſt, as *Dr. Short*, ſhould take the ſalt in this water to be nitrous. However prepared in the bowels of the earth from calcareous alkaline earthy matter, mixed with a mineral acid, and taken up by this water in its paſſage through its *ſtrata*, this ſalt is moſt undoubtedly a natural neutral of a moſt mild ſpecies. And this I was as fully convinced of before, from its taſte and effects, as I am now, an ingenious gentleman of the faculty has proved it by experiments to be ſo. To him, however, the honour of this diſcovery is juſtly due. And we find, from his account, that it reſembles Glauber and Epſom ſalt: that there is a little natural unneutralized magneſia alſo in it; which renders it yet more mild and aperient: and that the whole is quickened by a ſmall portion of ſea ſalt. A compoſition, in regard of its groſſer parts, admirable indeed! and ſo much of the ſaline properties of this water.

But though *Short* was certainly greatly defective in his knowledge of the nature of the ſaline parts; he was not in regard of the large quantity that enter into the compoſition of this water: nor of its

* See Dr. Fothergill's Experimental Enquiry.

powerful effects, nor of ſome of its great uſes, conſidered as a whole combined. And as to its fine mineral ſpirit and ſubtle ſulphureous principles themſelves, for the more ſome kinds of matter are divided, the more active and powerful they grow, a remarkable inſtance of which we have in ſome of the preparations of antimony; and this is the caſe alſo with ſteel, and particularly with ſulphur: as to theſe, I ſay, many perſons of the laſt generation (I ſpeak from my own knowledge) had much truer notions of them, whether communicated by *Short*'s experiments, thoſe of others, or gained by their own judicious obſervations, than any that in general obtain at preſent. Theſe, joined with their own ſagacity and experience of its effects, made them acquainted with ſome of the admirable powers and great virtues of this valuable water, as well as with the proper method of drinking it.

For this knowledge, and its good effects, the nation at that time was greatly indebted to them. I wiſh I could ſay theſe matters had been as faithfully handed down; or that I could compliment the attention, induſtry, and ſagacity of the medical gentlemen in general of the preſent age as highly as I can theirs. For, had either of theſe been the caſe, I am fully perſuaded they would not, for conſcience ſake, have ſuffered ſo excellent a water to have gone into ſo almoſt general a neglect.

But enough of this at preſent. That I may be perfectly conſiſtent, I ſhall juſt obſerve, that though the neutral nature of the ſalt in this water may, the natural mildneſs, fine taſte, and efficacy of it are not determinable upon chemical

chemical obſervations; nor the fine nature of its chalybeate qualities: for the natural proceſs, in regard of both, is widely different, in many reſpects, from chemical methods.

As to an analyſis; it may indeed be thereby proved, that iron enters into its compoſition, which may be known as well by the taſte. But what purpoſe will it anſwer to calculate that there are about four grains in every quart? unleſs it would convey a good idea of its ſubtle nature as it exiſts in this water; upon which we well know, if we know any thing, its agreement with the ſtomach, as well as powerful effects upon the conſtitution, depend?

To gain even a tolerable idea of this then, we are at laſt driven to the neceſſity of making obſervations on the great diſpoſition of the fine parts of the mineral ſpirit to fly off; which is alſo particularly the caſe with the volatile ſulphureous principle, one of the moſt excellent parts in the whole compoſition of this water; and whoſe perfect exiſtence in it as ſulphur, though in this volatile ſtate, is as fully to be evidenced by its ſmell and effects upon the diſcharges of the bowels, and other medical operations and uſes, as that of any of its other parts.

Beſides the ſaline parts, elaſtic air, chalybeate, and ſulphureous principles, in the delicate nature of the firſt, and ſubtle qualities of the two laſt of which, it is diſtinguiſhed from other waters of the ſame claſs, and that have properties of thoſe kinds, there is, as I have already obſerved, in this, as in all mineral waters, the *principium*

*inflammabile*; a certain ſubtle, aetherial ſubſtance, conſiſting in part of the fine particles of light or of fire, of a warm, balſamic, meliorating nature, which pervades its parts, and is a kind of band of union in them: a natural, vital, and invigorating principle; concerned, as well as the elaſtic air, in forming, raiſing, and ſupporting the mineral ſpirit, and alſo in uniting it with the body of the water.

Theſe, with its aqueous particles, are the chief things that enter into its compoſition: and, from the due knowledge of them, we are in part to form our ideas of it.

A ſuperficial knowledge and very imperfect attainments in ſuch matters will not be deemed ſufficient; good notions of the nature of ſome mineral waters, and preciſe ideas of their uſe are not ſoon gotten, if ever gained: for the cloſe attention only of minds duly qualified for, and truly turned to the ſtudy and attainment both of natural and medical knowledge, will make them maſters of them. Good natural obſervations on the various parts of a water, with proper experiments made, ſo as to form tolerable ideas of the whole, joined with good medical obſervations of its effects, with ſome other neceſſary requiſites, may perhaps lead us by degrees into ſuch a knowledge; which the inſiſting too much upon analytical methods, and drawing improper compariſons between chemical proceſſes and preparations, and too cloſe analogies with thoſe that are natural, I am fearful never will.—Thoſe teach us to revere nature, and to ſuſpect art; theſe

to extol the latter at the expence of the former. They are alſo apt to fill mens minds with vain imaginations of imitating mineral waters; falſe ideas of reſtoring them; and to entertain even deluſive hopes that, in the progreſs of ſcience, the works of art in this way may at length equal, if not ſurpaſs nature; rendering them thus eccentric and ungovernable till they are even bewildered in their own ideas.

I have already ſhewn the great difficulty there is of obtaining proper ones of the fine mineral ſpirit, and other volatile parts in this water. And even in regard of the more groſs part itſelf, of which the neutral purging ſalt is the chief; though it may ſeem to reſemble, in ever ſo perfect a manner, the Glauber and Epſom ſalt of the ſhops; be apparently of the ſame ſpecies, and ſeem to partake of the nature of both: but be it well remembered it is in many reſpects eſſentially different from them: being a native preparation formed in the earth; a compoſition of nature, not of art; which will always perfectly diſtinguiſh it in regard of purity, mildneſs, taſte, and efficacy, from all artificial preparations whatever.

*Of*

*Of the Powers and Virtues of the Cheltenham Water.*

FROM the account here given of this water it is evident that, in regard of its groſſer parts, its powers and excellencies conſiſt in the quantity of mild neutral purging ſalt it is endued with, ſoftened and rendered even yet more mild and eperient by its natural magneſia, and quickened by a ſmall portion of ſea ſalt; and in reſpect of the finer, in the exquiſite ſubtlety of and fine nature of its elaſtic, aerial, mineral, chalybeate ſpirit, and volatile ſulphureous principles: the latter being, in reſpect to the mineral ſpirit, in not only acting by their own fine powers ſeparately, but alſo in promoting and increaſing the penetrating and attenuating ones of the other, and ſoftening their action, what the natural magneſia is to the ſaline parts. But in all, as perfectly joined in one uniform whole, its powers are to be conſidered; and from it, in ſuch ſtate, its action naturally and fairly deduced.

Hence it becomes powerfully active in its operation, yet at the ſame time remarkably mild. Though abounding with ſaline parts it ſits well on the ſtomach: immediately affords ſupplies to, and fills its nerves; and alſo thoſe of that ſyſtem in general, with its ſubtle qualities: which in a fine, natural way, active, yet eaſy, and almoſt imperceptible manner, attenuate, improve, and reſtore the animal

animal ſpirits. And from hence, and its attenuant powers on the blood, are to be drawn the reaſons why it is apt to affect thoſe who drink it with a degree of ſleepineſs upon its firſt uſe; eſpecially if their juices are viſcid, or veſſels at all oppreſſed.

In its operations by the bowels it is active and powerful, yet mild. It dilutes, waſhes, and ſcours off any acid, viſcid, and acrid impurities that may lie in the ſtomach and inteſtines: paſſes into the veſſels of the natural ſyſtem, dilating them, and opening obſtructions in them, cleanſing away lodgements of viſcid and acrid impurities, whether of bile, or other humours; its mineral ſpirit and ſulphureous powers, attenuating and fitting them for diſcharge; and all this without a diſpoſition to lower and weaken, even in habits the moſt delicate, when properly uſed. On the contrary, it ſtrengthens the ſtomach, aſſiſts digeſtion and chylification; does not weaken the bowels; promotes and regulates their diſcharges; and gives activity and vigour to all the natural functions: its fine ſpirit properly ſupporting under its evacuating powers, and confirming the ſtrength of the ſolids, as the load is removed. It is therefore not only uſeful in bilious caſes, and obſtructions in the liver and inteſtines, but in thoſe of the ſpleen, pancreas, kidneys, and all the abdominal glands.

After relieving the body by the alvine diſcharges, when received into the blood it carries on its powers, eſpecially thoſe attenuant with an increaſed force: dilating and opening the veſſels; diluting, breaking, and dividing

dividing viſcid and tenacious humours; diſſolving acrid ſalts, and fitting both for diſcharge, by their proper emunctories, whether the more groſs ones by the kidnies, or finer by the ſkin; continuing alſo, during this proceſs, its operation daily by the bowels.

Hence it relieves diſeaſes in the cheſt, and oppreſſions on the lungs: opening obſtructions, and curing recent chronical diſeaſes in them. And while it is thus purifying the blood, and removing a groſs, oppreſſive, and irritating load from the habit, in a manner almoſt imperceptible, except for a few days at firſt while it is paſſing the veſſels, it never fails to ſtrengthen them, as in its action on the ſtomach and bowels, while it relieves them from a load of humours: reſtoring thus activity, power, and health to the vital functions.

If we purſue its action farther, even into the moſt remote receſſes of the nervous ſyſtem, we ſhall find it concerned in the ſame offices. Hence, from the due attenuation, preparation, and ſecretion of the nervous fluid, a fine regular flow of ſpirits ſucceeds; inſenſible perſpiration is promoted and regulated; the nerves braced up and endued with new vigour; the animal functions renewed, as it were, and put into proper order; and health reſtored to this part of the ſyſtem. A matter of the laſt importance indeed! and wherein digeſtion itſelf, and all the functions natural, vital, and animal, and the very principles of our life and being are immediately concerned. And all this it does in the moſt natural, eaſy, placid, agreeable, proper, and effectual manner,

ner, relieving the body by the groſſer diſcharges, while it is attenuating a load of tenacious humours, which, without ſuch natural helps, could not many times have a proper vent. And which, being ſuddenly rarified, and put in motion, in peculiar habits and conſtitutions. by improper methods, incapable of affording effectual relief by the alvine diſcharges, where the blood is foul and the body loaded, and but too frequently in a rupture of the veſſels, and even fatal hæmorrhages; or, where the vitiated humours are thrown with violence upon the brain, in apoplexies, and other deadly diſorders.

To ſum up all, the Cheltenham Water is eaſy in its operation, yet certain in its effects; is adapted, under proper management, to all ages and conſtitutions, even the moſt delicate:—is proper in diſeaſes of the head from tenacious, oppreſſive matter; in ſcorbutic diſorders of the lungs, incipient declines, and leucophlegmatic habits, and ſtrong tendencies to conſumption and dropſy itſelf; if the viſcera are tolerably ſound.

It has always been eſteemed in diſeaſes of the ſkin: opens obſtructions, and cures diſorders in the external glands: and, by its general, attenuant, detergent, aperient, evacuating, and ſtrengthening powers, is uſeful in chronic rheumatiſms; and powerful in leſſening, if not eradicating, that tenacious, acrid, oppreſſive, ſcorbutic matter, which, in regard of the humours, and as far as a diſeaſed ſtate of the juices is concerned, is the great radical cauſe of all diſorders, both internal as well as external, febrile, or chronical.

But

But it is peculiarly adapted to, and eminent in its uſe, in peſtilential conſtitutions of the air: when by intemperately hot and dry, cold or wet weather, and the frequent and ſudden tranſitions from one to the other uſual therein, ſuch foul humours are not only ſoon rendered more than ordinarily tenacious, compact, and, as it were, in ſome meaſure hardened, the finer juices being diſſipated; but, by means of foul vapours in the air, a moiſt atmoſphere, and long continuances of warm and wet weather, diſpoſed alſo to corrupt; the acrid, corrupt effluvia ariſing from ſuch impure matter, indiſpoſed for and very difficult of ſeparation, irritating the ſyſtem of the body in a depreſſed and languiſhing ſtate: effects unhappily obſervable, and but too plainly evident in the burning fevers, dreadful remittents, and even intermittents of the preſent time; their great diſpoſition to hang on long and return; and in the remarkable common and obſtinate ſtate of chronic diſorders. Which things have neceſſarily brought Cheltenham Water more into uſe in a ſhort time, than the ſupport it received, in its almoſt deſerted ſtate, from the few of the faculty who ſent their patients thither, joined with all the pains I myſelf have taken to recommend it, from a knowledge of its excellent uſes, confirmed by the experience of thirty years. The whole of which, conſidered together, eminently diſtinguiſhes this water from all others in this part of the world; and gives it a preference worthy the title of a remedy univerſal, as far as any thing natural can be ſuppoſed capable of deſerving it.

Now

Now, that all this, and much more than I can pretend to mention or enter into the detail of, is true of it, and that theſe are by no means the airy notions, or idle dreams of an imagination prepoſſeſſed in its favour, I take upon me to warrant from reaſon, ſupported by experience. But may I firſt be indulged in two plain queſtions, by way of addreſs to the gentlemen of the faculty in general: where is the mineral ſpring ſo peculiarly qualified in all the reſpects I have ſhewn this is, in the whole kingdom? What then can be the reaſon that a water of ſuch excellent properties ſhould have grown ſo much into diſuſe?

As I do not expect an anſwer to theſe, I will give it in another queſtion. If it is not owing to a defect of good knowledge of the animal œconomy, and in particular of the nervous ſyſtem, and its ſubtle fluid, nor to the not paying due attention to it, is it not too plainly to a general want of knowing the original and real cauſes of diſeaſe, as ſeated in the blood and juices, and as they regard diſorders both acute and chronical? To ſuch a total ignorance of hereditary ones in ſome, as even to doubt of their exiſtence; and to the idle notions and whims of too many regarding thoſe of the ſolids? Whereby the imaginary, or even real diſorders of the latter are taken only into conſideration by weak minds, and almoſt, if not wholly poſſeſs them, and uſurp the place due to both. Things that will ever happen to the framers and followers of imperfect ſyſtems; and to little minds that are not able to take in the whole that relates to a ſubject, but which

are

are apt to be filled, and, as it were, wholly poſſeſſed by a part of it.

But the conſequences of theſe imperfect and falſe notions in practice, are of a very ſerious nature indeed.—For upon theſe principles, or, at leaſt, under vague notions of the nature of putrid diſeaſes, and a total ignorance of the cauſes of thoſe which are peſtilential, as they ſubſiſt in the blood and the air, violent aſtringents are uſed in the firſt ſtages of thoſe diſorders, if not wholly at random, at beſt under falſe ideas of their alterative powers. Hence relaxation, irritation, debility, local diſorder, &c. are chiefly attended to; or an empyrical uſe of medicine ſet up in the place of a rational. A fine, eaſy way of gaining knowledge, and a compendious mode of practice indeed, could it be well eſtabliſhed! The effects ſhew themſelves accordingly in the confinement of vicious humours, incapable of attenuation and ſecretion by the finer glands, within the body, which ought to be moved and diſcharged in as eaſy and free a manner as they can out of it; but which paſſage in this reſtrained and confined ſtate of the whole, and particularly of the bowels, they cannot well obtain: the conſequence of which injudicious adminiſtration of ſuch powerful medicines is ſpeedy death in many caſes, in others lingering diſeaſe.

Theſe are ſome of the cauſes, as I apprehend the matter, and I am pretty certain I am right, of the defective knowledge of this excellent water which has obtained; and indeed of the real and proper uſe of moſt mineral ſprings. And to them may be added, the want of due

notions

notions of the nature and cauſes of the efforts of the body in acute diſeaſes; the too common inattention to the doctrine and nature of criſes; and the want of a good knowledge of and obſervations ſince the time of *Hippocrates*, on the various ſtates and conditions of the air, and in particular of its ſtate in peſtilential conſtitutions; though matters, whoſe uſe has been eſtabliſhed by that great maſter in phyſic between two and three thouſand years ago.

I am ſorry I am obliged to urge ſuch unwelcome truths: but theſe are matters it is neceſſary fully to enquire into, before a better knowledge and conſequent practice can be eſtabliſhed, in the room of the preſent defective and erroneous notions.

But to return to the Cheltenham Water.—It is an admirable general preparative for drinking the Bath waters, when they are neceſſary; which they, in their turn, though uſed only as a bath, when proper natural warm bathing, by way of preparative, may be neceſſary, as is ſometimes the caſe, in many oppreſſed conſtitutions, foul habits, febrile diſpoſitions, and conſumptive tendencies, cannot be for it. In fact, it will anſwer in moſt caſes wherein Bath waters themſelves can do ſervice, except in ſome diſeaſes of the ſtomach; in diſorders ariſing from, or attended with great nervous debility; in paralytic tremors, or contractions of the limbs, and gouty caſes; eſpecially thoſe wherein bathing is neceſſary, with a few others. At leaſt Cheltenham water will much better ſupply the place of Bath waters, than they can that of

Cheltenham; and that even in ſome gouty caſes, for which the former are famous. For, by its attenuant powers on the tenacious juices of highly ſcorbutic or oppreſſed habits, and their partial diſcharge to the relief of the conſtitution, joined with its ſtrengthening powers and action upon the ſolids, it has often given the gout, when Bath waters themſelves, adviſed and uſed intentionally for that very purpoſe, have failed. And, in all ſuch caſes as are before mentioned, is, at leaſt, a moſt neceſſary preparative for them.

But were I to attempt to diſcuſs the point fully, and declare all the admirable qualities, great virtues, and manifold uſes of this excellent mineral ſpring, it would be no eaſy matter to do it. I ſhall therefore proceed to relate ſome pretty extraordinary caſes, by way of illuſtrating my notions of this matter, and confirming the truth of what I have advanced.

*Caſes*

*Caſes illuſtrating the Nature, great Efficacy, and admirable Uſe of the Cheltenham Water.*

## CASE I.

A GENTLEMAN of fortune, of a middle age, and very ſcorbutic habit, was in a *maraſmus*, which had not only long reſiſted the powers of medicine; baffled thoſe of Briſtol Wells the preceding ſeaſon; but was at length advancing with a rapid pace, and not only attended with an hectic fever, profuſe ſweats, and great debility, but, by the improper uſe of the cold bath, and other cooling and reſtringent methods, began to be complicated with obſtructions in the glands of the bowels. Knowing the cauſe of his diſorder, even in this very advanced ſtate of it, I adviſed the uſe of the Cheltenham water. He went thither, and its uſe for a month only, not only took off the hectic fever and profuſe ſweats, and cured the conſumption, but alſo ſo effectually opened the obſtructions in the bowels, that he was not under a neceſſity of going again for ten or twelve years.

*Reflections on this Caſe.*

The ſucceſs in drinking the Cheltenham water, in this very extraordinary, and almoſt deſperate caſe, contrary not only to known and eſtabliſhed rules regarding its uſe in general, but alſo the very reduced ſtate of the

patient in particular, ſhews how neceſſary the exact knowledge of the radical cauſes of diſeaſe is to the preſcribing mineral waters with preciſion and certainty; and that without the diſcharge of the groſs offending of a diſeaſe no ſucceſs can be expected. Briſtol water, we find, failed in a conſumptive caſe, even in a very advanced ſtate, and was cured ſolely by the Cheltenham; which ſhews in the cleareſt light its admirable attenuant and evacuant properties, as well as declares its ſupporting, reſtoring, and confirming powers.

## CASE II. and III.

A GENTLEMAN of a middle age, and hereditary ſcorbutic habit, diſpoſed to pretty frequent returns of fevers, inflammation of the bowels, and ſubject alſo to diſorders in the ſtomach, was withal inclined to be conſumptive; to have coughs and diſorders on the lungs hang on him, attended with a ſlow fever; and not long ago was pretty far gone in this way, the diſeaſe continuing upon him for two or three years together. During the courſe of theſe complaints he has regularly went to Cheltenham every ſeaſon but one for fourteen or fifteen years, and drank the water by my directions, whether he had the cough upon him or not. By theſe means, with his natural ſtrength, he withſtood the dreadful attack upon his conſtitution, mentioned above, and by degrees got clear of that lingering and continued ſtate of diſorder upon his lungs;

lungs; when another perſon, in nearly the ſame circumſtances, under a different treatment, was carried off by it in a few months.

To this caſe I ſhall ſubjoin that of another gentlemen, nearly of the ſame age, who had alſo a ſtrong tendency to a ſcorbutic decline, which was relieved in its beginning, and ſtopped in its progreſs, by drinking this water, and perſiſting in its uſe for a few ſeaſons.

### *Reflections on Caſe* II.

From this caſe we learn, contrary to received notions and vulgar prejudices, not only that the Cheltenham water, drank on the ſpot, is not improper in all coughs, but alſo how uſeful perſiſting in it annually may be, even in ſome long continued chronic diſorders of the lungs, ariſing from groſs matter, not only lodged for a while, but fixed ſome time upon them; if they remain tolerably ſound, and are not too much obſtructed and weakened by the long continuance of ſuch diſeaſes, nor got into an ulcerated ſtate.

## CASE IV.

A GENTLEMAN of an active diſpoſition and conſtitution, naturally ſtrong, but near ſixty years of age, was attacked violently in the autumn of the year 1783, with the epidemic fever of that peſtilential conſtitution. The bark being adminiſtered early in the diſorder, he had

afterwards a very dry ſkin ; and, in the courſe of it, was ſeized with convulſive ſpaſms, which degenerated, in its decline, into a ſubſultus tendinum, and a comatoſe diſpoſition, attended with great weakneſs and high putreſcence of the juices. From this deſperate ſtate he was relieved by a ſmall doſe of James's antimonial powder, joined with the uſe of Camphor julep, gently acidulated with vinegar ; which brought on a very plentiful perſpiration, to the great relief of all his ſymptoms.

Having however, as might be expected, but an imperfect criſis, he became ſubject, on his recovery, to a diſorder in the ſtomach, with indigeſtion, a coſtive habit, ſwellings of the legs, and other ſymptoms of a chronical diſorder; for the relief of which I ſent him down early the next ſeaſon to Cheltenham to drink that water. Immediately upon the firſt uſe of it his appetite returned; his digeſtion was reſtored; and, though he drank it but a fortnight, the dropſical ſwellings of his legs went down, his looks grew vivid and lively, and he was relieved of all his ſymptoms. He did not, however, continue in health till after another effort of the conſtitution in a tertian intermittent, which came on in the autumn of that year, near the ſame time he was ſeized with the fever the preceding ſeaſon.

*Reflections on this Caſe.*

From this caſe we obtain a knowledge of the powers the Cheltenham water hath of reſtoring digeſtion, ſtrengthening the ſtomach, unloading the habit, attenuating

ing the humours, confirming the ſolids, and preventing the progreſs of an incipient anaſarca.

## CASE V.

A YOUNG gentleman, an attorney, about twenty-two years of age, in conſequence of being inoculated for the ſmall-pox, had a ſlow fever, which hung upon him ſeveral years. In the year 1782, his diſorder increaſed ſo faſt upon him, that in the autumn he was in great danger of falling into a conſumption, and I was obliged to ſend him to drink the Cheltenham water as late as in the month of October. By reaſon of the declining ſtate of his health, he was rather unwilling to go at that time of the year: he was however ſenſible of ſuch benefits received, that he called on me to return me thanks upon his return. The next ſeaſon, having the advantage of drinking the water at a more proper time, febrile ſymptoms ſoon came on, and he was cured on the ſpot by a critical diſcharge of the matter of his diſeaſe.

### *Reflections on this Caſe.*

If this caſe does not ſhew the great attenuant powers of this mineral ſpring, the fine ſtimulus it gives to the conſtitution, and its admirable activity in raiſing its force, and ſupporting its action, nothing can.

## CASE VI.

A MIDDLE-AGED man, a farmer, of a thin habit, had been afflicted, at times, with a violent pain in the head for ſome years. It ſometimes increaſed to ſuch a degree of violence, that he was hardly able to bear it; and, from the feveriſh heat attending the diſorder, and its frequent returns, had made his head ſo tender and weak, that he was almoſt conſtantly obliged to wear his night cap. He was greatly relieved by drinking the water only for a fortnight, his affairs not permitting a longer ſtay, when other medical methods had been uſeleſs: and by it a foundation was laid for ſome benefit, which was afterwards obtained from cupping and other means. Had the water however been properly perſiſted in, it is probable the cure would have been more compleat.

## CASE VII.

A LADY, not of the beſt natural health, during her ſeventh pregnancy, had been ſubject to a ſlow fever, which continued during her lying-in and afterwards; when it was alſo attended with flying rheumatic pains, a leucophlegmatic habit, and œdematous ſwellings of the face and hands, ſo that ſhe ſeemed even in danger of growing dropſical. By drinking the Cheltenham water a month ſhe was greatly relieved, and came home apparently well. A febrile diſpoſition, however, ſoon after began

began to ſhew itſelf, and continued upon her ſome months, which, with a little medical aſſiſtance, ended in her cure. I ſhall make ſome reflections upon this caſe when I come to the tenth.

## CASE VIII.

A MARRIED gentlewoman, between twenty and thirty years of age, was afflicted with rheumatic pains, and ſo great a flux of humours to one breaſt, as increaſed it to treble its natural ſize. She had alſo at times ſuch uneaſy ſenſations in it, and in the arm-pit, as greatly alarmed her; being not without fears that it might even become cancerous; as has indeed of late, under the preſent peſtilential conſtitution, been the caſe with many perſons, even of no advanced age. By drinking the Cheltenham water on the ſpot only a month, which perfectly agreed with her, the rheumatic pains went off, the ſwelling of the breaſt went down, and her health was reduced into a much better ſtate. Whereas, on the contrary, a gentlewoman not more than forty, under a quite different treatment, namely, by the uſe of ſea-bathing, had not only a cancer confirmed in one breaſt, but another ſoon after alſo appeared in the other.

*Reflections on this Caſe.*

The eaſy and ſudden relief obtained in this caſe, wherein the humours had acquired a very unnatural impellent force, attended with a certain degree of malignity, and

and the weakneſs brought upon the part affected thereby, being all duly conſidered, evidently point out the fine, yet powerfully attenuant, evacuant, and confirming powers of the Cheltenham water, and its uncommon efficacy.

## CASE IX.

A YOUNG gentleman, about twenty-two or twenty-three years of age, had an elephantiaſis, which, inſtead of being relieved, had been rendered much worſe by the uſe of ſome violent mercurials; and, from an attack upon the breaſt, a little before he went to Cheltenham, ſeemed diſpoſed to fall upon the lungs. By drinking the water for a month only, which acted in the moſt eaſy, natural, and agreeable manner, he was cured.

## CASE X.

A LADY had been in a declining ſtate of health for ſeveral years, for which ſhe had, by medical advice, drank various waters of the chalybeate kind, as thoſe of Scarborough and Tunbridge; but had been forbid the uſe of the purging water at the former place, or of any other of that kind. Even in this more reduced ſtate of the conſtitution, and advanced ſtate of the diſorder, I was confident the Cheltenham water, under management, would agree, and ſo it happened. She drank it nearly in the common way, her conſtitution conſidered, for a fortnight;

night; and then in an alterative manner for the ſame ſpace of time. The conſequence was, that ſhe paſſed the winter tolerably well, and better than uſual, and the next ſpring had a pretty ſmart febrile effort, a thing ſhe had not had for many years before. She had a better ſtate of health after it all the ſummer, and at the latter end of it viſited Cheltenham again, when the water agreed well with her, and ſhe bore it better than before.

*Reflections on this and Caſe the Seventh.*

It is very obſervable, that, in theſe caſes, ſalutary febrile efforts aroſe in the conſtitution, at a greater or leſs diſtance of time after drinking this water. This is evidently owing to the relief the body receives, during its uſe, from its evacuant powers, and the effects of its attenuant ones upon the juices, its ſtrengthening ones upon the ſolids, reſtorative ones upon the conſtitution in general, the increaſe of the natural powers, and the ſtimulus it gives by its fine ſpirit. By the two former the body is prepared, and the humours rendered fit for, and by the reſt the ſolids moved and enabled to uſe efforts ſo beneficial and neceſſary to health, as the various changes of the air and ſeaſons are diſpoſed to bring them on. They ſometimes ariſe, as I have already obſerved, immediately on firſt drinking the water, as in caſe the 5th, that is in ſtrong conſtitutions, and habits ſo diſpoſed; in others during its uſe; frequently ſoon after it; and in ſome caſes attended with debility after a

longer period. And its raiſing ſuch ſalutary efforts, in ſo proper, ſafe, and effectual manner, is a matter for which this fine water is remarkably peculiar, but which I never knew noticed; and at once ſhews its ſuperior nature, quality, and admirable efficacy. And as the power this water hath of thus opening the texture of the blood is of the utmoſt conſequence to the body in its future efforts, ſo thoſe efforts themſelves are of various kinds. A gentleman ſubject to an aſthma, had a cough, whether brought on by cold or otherwiſe, for ſome weeks while he drank this water; and which continued upon him with expectoration ſome time after, with great benefit to his conſtitution. And, after an alterative uſe of it, this author himſelf had a fever, attended with a cough and copious expectoration, which diſcharged from his body a load of matter, that might otherwiſe have had very pernicious effects.

## CASE XI.

A YOUNG gentleman, a divine, of a rather delicate conſtitution and thin habit of body, whoſe family, in the male line, had been much afflicted with the gout, but who never had any efforts of that kind, was ſubject to inflammations in the eyes, and complaints in the bowels, and the matter of his diſeaſe ſeemed alſo much inclined to fall upon the lungs. Upon the firſt uſe of the water, the ſeaſon before the laſt, he was ſeized with febrile ſymptoms

toms of a pretty briſk kind, attended with ſo violent a pain in one hip, as ſoon to confine him to the houſe. However a plentiful perſpiration coming on, and ſome aperient methods being uſed, he was, after a few days, able to get down to the well with the ſupport of a ſtick, and continued drinking the water, which then perfectly agreed with him. By its uſe he received great benefit, and the good effects of it he ſtill feels, though he did not repeat it the laſt ſeaſon.

*Reflections upon this Caſe.*

This caſe affords us a notable example of the great powers and fine activity of this excellent water, and the capacity it hath, without the aſſiſtance of thoſe at Bath, of attenuating and driving matter out of the habit, as it were in a moment, in conſtitutions not too much debilitated by age or intemperance; even that which is gouty and hereditary, and ſo increaſed in ſcorbutic tenacity, and of a diſpoſition ſo deadly, as to be incapable of elimination by any ordinary methods, ready to fall upon the lungs, and ſtrike at life itſelf.

## CASE XII.

A MARRIED gentlewoman, not thirty years of age, of a pallid complexion, and leucophlegmatic habit, attended with ſo great an impurity of the ſerum of the blood as to give a yellowiſh tincture to the ſkin, had been in a very

very indifferent ſtate of health ever ſince ſhe had been inoculated, many years before, and had now ſwellings of the legs. The humours were not only thus impure, and the veſſels weak, but the former alſo ſo acrid, that ſhe was afflicted with violent itchings upon the ſkin; and, to add to the dreadful circumſtances of her caſe, with an inability many times, when eating, of getting down her food. When ſhe had been given up by thoſe whom ſhe had in general conſulted, and life was almoſt become a burden to her, ſhe went down to Cheltenham, and drank that water. By doing this only for three weeks, and opening an iſſue, ſuch a turn was given to the conſtitution next year, that, from a flat lifeleſs look, her countenance became animated, and of a more heathful caſt, and clearer colour. Moſt of her bad ſymptoms, except the difficulty of ſwallowing, were alſo gone off, and her health in general was in a much better ſtate and ſurprizingly reſtored *.

*Reflections upon this Caſe.*

In this caſe nature appears under the moſt diſtreſsful circumſtances, ſtill further aggravated by the danger of the loſs of life itſelf: but we find her relieved, with a little other medical aſſiſtance, by only three weeks uſe of this water.

* Many of the caſes mentioned, as well as this, were clearly to be traced from the ill effects of inoculation.

CASE

## CASE XIII.

A GENTLEMAN of a ſtrong conſtitution, and naturally good habit, but of an advanced age, being turned of ſixty, had been affected in the ſpring pretty violently with the preſent epidemic peſtilential ague. Though he had been greatly relieved by plentiful diſcharges of phlegm and bile, and other vitiated humours, both from the ſtomach and bowels, and had a great quantity of viſcid ſaliva thrown off by a ptyaliſm that came on, and alſo had copious ſweats, after the fits, during the courſe of his diſorder, and not taken the bark, except a few papers that were improperly given at firſt, till at leaſt a month after the attack; yet, by taking it, on account of his age, and leaſt his ſtrength ſhould be too much reduced, before a proper criſis came on, he became ſubject to returns of his diſorder, notwithſtanding the repetition of that medicine. After the laſt return I ordered him the bark again to put off the diſorder for a time, though I was ſenſible it was not farther to be depended on; and being going to Cheltenham, took him and ſome other patients with me, and put him immediately upon a courſe of drinking that water. From the time he began uſing it his health began to return: it acted in the moſt agreeable and effectual manner, and he was perfectly cured by drinking it only a fortnight, having enjoyed good health ever ſince.

*Reflections*

*Reflections on this Caſe.*

I wiſh this caſe in particular may be treated with the regard and attention it deſerves: for therein we have a notable inſtance of a perſon, even of an advanced age, being perfectly capable of uſing the water, and bearing a plentiful diſcharge by the bowels in an intermittent caſe of ſome continuance, and its uſe attended with the moſt beneficial conſequences, when that of the bark alone had failed. I inſiſt upon it the more, becauſe it does not enter into the imagination of many practitioners of the preſent times, even to dream of ſuch a mode of treatment in theſe caſes; and becauſe it infallibly ſhews, that there is ſomething more to be thought of in the cure of agues, eſpecially of the preſent difficult and dangerous kind, and attended ſo often with even fatal conſequences, than mere preſcribing by rote, or the uſe of aſtringents only; which merely brace up the veſſels, and that only for a time, and prevent the ſalutary efforts of nature by confining the matters of the diſeaſe, which ought to be critically diſcharged *.

I adviſed a gentleman of my acquaintance, exactly in the ſame circumſtances laſt year, to follow the ſame method, but not taking the bark before he went to Cheltenham, and having a return of his diſorder on his arrival, upon

* Were I to take notice of the conſequences I have ſeen follow ſuch a perverſe adminiſtration of the bark, my obſervations would not fail to fill a pretty large volume.

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taking medical advice he was perſuaded to return, inſtead of having his diſorder thrown off by the bark, and being then put upon a courſe of the water. This ſufficiently ſhews what different notions various perſons entertain of the nature of diſeaſes, the practice of phyſic, and the uſe of mineral waters. And yet I cannot help wondering at it in the preſent inſtance; ſince *Hoffman* has long ago intimated that it was common with him to uſe the Seidlitz neutral purging waters in Germany, which do not contain any ſteel, in intermittent caſes, with great advantage. Certainly that at Cheltenham, which is endued with a very fine principle of that kind, is better calculated for ſuch purpoſes.

## CASE XIV.

A YOUNG man, a blackſmith, about twenty-one years of age, had been afflicted for ſome years, in an extraordinary manner, with obſtructions and inflammations in his bowels. The diſorder uſually attacked him three or four times a-year, and, notwithſtanding all medical advice, by way of aſſiſtance or prevention, began to return with ſuch frequency and violence, as not only weakened his ſtrength, and greatly impaired his health, but rendered his life miſerable, and threatened even that. Upon drinking the Cheltenham water it opened the texture of his blood ſo powerfully on a ſudden, that he was attacked with his diſorder in a violent manner, and ob-

liged to looſe ſeveral ounces of blood. After this, however, it agreed ſo well with him, that he was able to work at his trade during his continuance upon the ſpot for two months, the year before laſt. He paſſed the autumn, winter, and ſpring with only two returns. And, ſince drinking the water again for a month the laſt ſeaſon, which perfectly agreed with him, he has had no return; neither the winter ſeaſon, nor the extraordinary inclemency and changeableneſs of the weather this ſpring, having had the leaſt ill effect upon his conſtitution.

*Reflections on this Caſe.*

The violent return of the diſorder in this extraordinary caſe, upon the firſt uſe of the Cheltenham water, evidently points out its admirable activity, and fine attenuant powers; as the eaſe and effect attending its continuance do its gentle mode of action, evacuant, detergent, and ſtrengthening nature.

But were I to purſue the matter of proof, by examples, of the admirable nature and efficacy of this mineral ſpring, I ſhould infallibly tire my reader with my ideas and obſervations. However, before I leave it, I ſhall juſt obſerve, that a gentleman of fortune uſed it, in bilious complaints and rheumatic pains, with much greater advantage than that at Buxton; which was evidently owing to its diſcharging thoſe groſs juices by the bowels, which the other is more apt to confine, acting chiefly by perſpiration; and that a lady, of a pretty ſtrong conſtitution,

tion, who had a diſorder in the ſtomach, attended with an obſtinate conſtipation of the bowels, a ſlow fever, and great foulneſs upon the tongue in a morning, which had reſiſted the power of other medical methods, was relieved of theſe complaints by its uſe, though ſhe did not attend on the ſpot to drink it to the beſt advantage. Another gentlewoman alſo, who had a diſorder at the ſtomach, attended with indigeſtion, and at times alſo with pain, received benefit from it when medicines failed: which good effect ſhe endeavours to ſecure by a never failing attendance every other ſeaſon.

Now, all theſe caſes, and many others, even in ſcrophulous habits, atttended with obſtinate diſorder and difficult circumſtances, which other methods would not reach, were under my own inſpection, and, in regard of the cure, or relief obtained, immediate direction. And indeed I can truly ſay, that this mineral ſpring has very ſeldom diſappointed my expectations from it. In the caſes related we ſee many of the functions natural, vital, and animal, more or leſs diſordered, as the diſeaſe was local or general, the vicious humours more or leſs untractable and predominant in the body, and the caſe attended with a greater or leſs degree of relaxation, a partial or more univerſal weakneſs in its ſyſtem. We have diſeaſes of the ſtomach, with indigeſtion, and a vitiated ſtate of its juices, and with or without pain or internal heat,—bilious diſorders,—obſtructions and inflammations of the bowels,—incipient declines,—ſlow fevers, and more advanced caſes, attended with an hectic fever

in almoſt its laſt ſtage,—diſorders on the lungs, and coughs of long continuance and a fixed nature,—aſthmatic complaints—violent and repeated attacks upon the brain itſelf,—obſtinate intermittents—leucophlegmatic habits and incipient anaſarcas, attended with great depravity of the humours,—chronic rheumatiſms and diſorders from hereditary gout,—the elephantiaſis, and other diſeaſes of the ſkin,—violent impulſes of ſuch malign humours to the breaſt, as to be ſuſpected of being even of a cancerous nature,—caſes attended with the undue reſtraint and confinement of foul humours in the body, on the one hand, and with profuſe diſſipation, attended with very great debility, on the other, all cured, or greatly relieved, by the uſe of this water.

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*Of the Method of drinking the Cheltenham Water, and the Regimen neceſſary to be obſerved.*

IT has been an eſtabliſhed method, grounded both upon experience, and the very nature of the thing itſelf, to drink this water in general at firſt, in ſuch quantities, at proper intervals in a morning, as to have an operation by the bowels. And for theſe obvious reaſons, that in all caſes where the blood and juices were foul, or there was any oppreſſion general or particular, it was neceſſary

neceſſary that relief ſhould be had this way, before its great attenuant powers acted too far, and leſt they ſhould get the ſtart of its evacuating properties by the greater emunctories. Now, that this is the right method, except in caſes when the water ought to be uſed merely as an alterative, we ſhall be fully convinced, if we duly attend to its general effects upon the firſt drinking. We know it is very apt to occaſion ſleepineſs, though a cold water, as is peculiarly the caſe with thoſe that are naturally warm. But, beſides this, it ſometimes brings on giddineſs and tenſion in the head, heat, fulneſs and quickneſs of the pulſe, and very briſk febrile efforts. Now, would it not be right, nay, is it not neceſſary, that the body ſhould have proper relief by the bowels under ſuch circumſtances? This muſt be had from medicine, as in the caſe of drinking mineral waters, which do not purge, or otherwiſe. But if this water be its own preparative, what is ſo proper to do this as the water itſelf, which will act by the bowels in general, if properly drank, without medicine?

Should it fail of having this effect, a few of the ſalts prepared from it may be diſſolved in the water, and taken as a medicine warm. Which is a much better way than to diſſolve ſuch ſalts in it, without warmth, and take it cold, or in its natural ſtate. Becauſe the ſalt in it, as a mineral purging water, prepared by divine Wiſdom, is large and abounds, as and much as the action of its ſpirit, though fine and powerful, will well ſupport, when taken

in its natural ſtate, without ſitting too cold on, or doing injury to the ſtomach.

During a courſe of this water it will in general act by the bowels, if drank in proper quantities. There are ſome conſtitutions, however, which are exceptions to this general rule: my own is one. I found it diſpoſed to act wholly in an alterative manner, as I expected, and, being in a condition for it, continued the uſe of it. I did not indeed drink large quantities, but a relation of a delicate habit drank three pretty large glaſſes every morning, and another in the evening, and yet it would hardly produce a motion by the bowels, but acted chiefly in an alterative manner, being affected with thirſt, and having a remarkable ſalt taſte in her mouth all the time ſhe drank it. The effects, however, were good, ſhe having never had ſo good health in her life, as during the uſe of this water.

There is not a greater error in the uſe of mineral waters than ſwilling down large quantities; it defeats their intention in all reſpects. For if evacuations are wanted, how are ſuch profuſe ones to be borne from their undue uſe? and if the veſſels want ſtrengthening, how is this to be done while ſuch loads are taken daily in?

In the alterative mode of uſing the Cheltenham water, it may be drank to the quantity of four or ſix ounces, or ſometimes more, three or four times a day, at proper diſtances of time. And it is of ſo excellent and fine a nature, that it may be thus accommodated to any conſti-

tution, even the moſt delicate, and though in almoſt ever ſo weak a ſtate. For, by theſe means, it may be brought to act almoſt entirely, if not wholly, by its attenuant, diuretic, perſpiring, and confirming powers, like thoſe of Spa and Pyrmont; and is a much better medicine of the chalybeate kind for Engliſh conſtitutions in many caſes. But then it muſt be always drank at the ſpring head; for when removed from it, it immediately looſes it ſulphureous principles, and very ſoon alſo its elaſtic air and mineral ſpirit, though corked up in a bottle ever ſo cloſe.

As to the regimen neceſſary to be obſerved during a courſe of this water it is naturally evident enough. The diet ought certainly to be light, and of eaſy digeſtion. And, conſidered in this light, nothing appears ſo good in general as the fine mutton with which the place is plentifully ſupplied, joined with proper productions from the garden. A glaſs or two of wine after meals is alſo in general uſeful; and temperance, moderate exerciſe, the not being up at late hours, and indeed every thing which tends to promote ſerenity of mind, and a due compoſure of ſpirits, are all neceſſary to encourage its good effects.

Before I leave this article, I ſhall juſt take notice of a common error, which too many who come to drink this water are apt to fall into: and that is a too great diſpoſition to indulge the appetite, which almoſt certainly comes on upon its uſe. This error is attended with great diſadvantage in regard of future health. For

hereby the confirmation of the ſtrength of the ſtomach is prevented, and the eſtabliſhment of the digeſtive powers; and alſo a freſh load is laid in upon the habit, which will not fail not only to leſſen the good effects ariſing from the uſe of the water, but alſo be certainly productive of ill conſequences in future. And this is a ſufficient reaſon why I do not recommend the making ſo nutritive a thing as milk a part of diet, during a courſe of this water; which, beſides, is not well calculated for its cool ſaline qualities, and their operation by the bowels; and ought not therefore to be inſtituted for a part of diet, unleſs ſome peculiar circumſtances indicate its uſe.

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*That no powerful Aſtringents are to be uſed during the Uſe, nor, in general, after drinking the Cheltenham Water.*

AS this water is its own preparative, ſo it ſtands in no need, in general, of ſtrengthening methods afterwards; a return of ſtrength and health being the natural conſequence of its proper uſe.

But there are other, and thoſe cogent reaſons too, ariſing from my general knowledge of medicine, and the peculiar effects of this water, which make me not fond of the uſe of aſtringents, even after, much leſs during its uſe;

uſe; neither of the bark, cold bath, nor even of Briſtol water, nor any thing more bracing than Pyrmont water, ſome light preparation of ſteel with bitters, or Bath waters, when proper and neceſſary; which have no ſuch confining qualities as the other have; at leaſt not till after the ſecond ſeaſon of its uſe.

Every perſon who thinks properly muſt be ſenſible, that due alterations are not made in bodies conſiderably affected with diſeaſe on a ſudden. That I think the Cheltenham water is as capable of producing ſudden alterations for the better as any thing, every one who knows me will believe. But I have already obſerved, in my relation of, and reflections upon, two caſes, that in conſequence of the attenuant powers of this water upon the blood, its active principles in opening its texture, and rendering it fit to have the vitious humours ſeparated from it, efforts are apt to ariſe, at various diſtances of time, as change of ſeaſon and other circumſtances bring them on. Now, if we compact together again, and condenſe as it were the blood, after its texture has been thus opened, and confine and ſtraiten the emunctories of the body by the uſe of the bark, cold bath, or by ſuch cooling and repreſſing powers as are inherent in Briſtol water, can we reaſonably expect either that ſuch efforts will ariſe as in its more open and attenuated ſtate, or if they do, that, under the latter circumſtances, they will be attended with the eaſy preparation and free diſcharge of the vitiated humours, as in the former, or attended with ſuch ſalutary and beneficial effects?

It

It was the wiſe maxim of the ſagacious *Hippocrates* always to give nature in her common efforts fair play: and the ſame holds good with regard to the uſe of mineral waters. For the reſtoration of conſtitutions which have long been in a bad ſtate, and the relief of caſes which have been improperly treated by aſtringents, is not the work of a day or a month. And to the almoſt indiſcriminate uſe of ſea-bathing, ſo common a practice at preſent, is to be attributed the want of the good effects ſo often complained of, under an alterative courſe of drinking that water. It is true, indeed, it may be neceſſary in many caſes to ſupport the conſtitution thereby, at leaſt when under any conſiderable decline, that it may be enabled to bear, in a tolerable manner, the internal uſe of a water ſo groſs and void of ſpirit, as well as rough in its action. But theſe are circumſtances eaſily remedied by a more judicious preſcription, and better choice of waters, and by no means incident to mineral waters, if they are of a good kind, nor their uſe even in conſtitutions the moſt delicate.

Theſe are thoughts indeed out of the common way; but if right, it is neceſſary they ſhould be known. A Gentleman of my acquaintance, at ſome diſtance, had been taking the bark for a conſiderable time, by the direction of a practitioner in phyſic, under a notion of his being greatly relaxed; and moreover, had been perſuaded, laſt ſummer, to add to it the uſe of the cold Bath. And indeed, as I have elſewhere obſerved, this is the common mode of practice under the preſent reigning

ſyſtem,

ſyſtem. Under this treatment he gradually grew worſe and worſe in other reſpects, and gained nothing in point of ſtrength. When he conſulted me, knowing his caſe depended more upon a bad ſtate of the blood than upon a relaxation of the veſſels, as indeed was but too evident, his diſorder having ſometimes of late roſe into his head with ſuch violence, as to make him ſo giddy that he could hardly ſtand. I propoſed a journey to Cheltenham to him, intimating, however, at the ſame time, that it would certainly have been right for him to have bathed firſt at Buxton, if his affairs would have permitted; as I do not approve of artificial warm baths in ſuch caſes, and as the natural ones at Bath, even the mildeſt of them, were not proper in his caſe. Having therefore totally forbid the further proſecution of aſtringent methods, to Cheltenham he accordingly went; and after he had drank the water three weeks, he was attacked with a pain in the right hypochondrium; ariſing probably from a diſtention of the veſſels in the liver, and the tendency of diſeaſed matter that way, as was peculiarly the caſe in many of the diſorders of the laſt ſeaſon*, even thoſe of the febrile kind; and undoubtedly owing alſo, in ſome meaſure, to the attenuant nature of the water upon the

* The morbid humours in the body were arrived at ſo great a degree of tenacity in ſome perſons laſt ſeaſon, through the regular continuance of a peſtilential conſtitution for ſeveral preceding years, that two other gentlemen were affected with ſimilar complaints after drinking this water; a matter I have not before obſerved, and moſt undoubtedly owing to the before-mentioned tendency of morbid humours, incapable of elimination but by the glands of the bowels.

blood,

blood, and its aperient powers in the veſſels, joined to the undue reſtraint which had been brought upon the emunctories and ſecretory veſſels of the body, by the uſe of aſtringents, if being out late, nor no other irregularity was concerned therein.

It may ſeem ſomewhat ſurprizing that, under theſe circumſtances, he ſhould be adviſed again to the uſe of the bark. It was prepared indeed in a decoction of Cheltenham water, leſſened in its quantity by boiling down; a little of which he took, and it purged him, the thing he wanted. After his bowels had been thus relieved, the reſt of the matter diſperſed, flew into and gave him pains in his limbs. Now, would not the decoction of Cheltenham water alone, or the uſe of any other gentle aperient, and the forbidding the uſe of the water at the well a few days, have been a method full as conſiſtent? The matter of fact however is, that the old ideas of relaxation were again inſiſted on, and the patient adviſed again to the uſe of the bark, as the moſt proper thing for him to perſiſt in on his return.

*The Nature of the Cheltenham Water and its Effects, compared with thoſe of ſome other Mineral Waters of the ſame Claſs.*

I HAVE already obſerved, that the ſalt in Cheltenham water, though large in quantity, is remarkably mild in its nature, and conſequently eaſy in its operation, and that its mineral ſpirit is fine and ſubtle. On the contrary, the ſalt in Harrowgate purging water is harſh, and in quantity, which makes it heavy. Liſter calls it mere common ſalt; it is certain the water is rough in its operation, though it abounds with ſulphureous qualities. And as it hath no ſteel, its action is not ſo well ſupported as that of Cheltenham; eſpecially in regard of delicate habits and conſtitutions on their decline. It is indeed powerful, but violent in its effects; and therefore, like ſea water, only fit for ſtrong habits and ſtomachs *. Beſides the ſulphureous principles are widely different in the various waters of this kind, as well as in others of a different claſs. In the Cheltenham water it is ſmall in quantity, ſubtle, and active—in thoſe of Harrowgate more groſs and abundant—in thoſe of Scarbo-

* A gentleman who drank this water in large quantities, under ſuch circumſtances, imprudently, and contrary to advice, neglecting alſo thoſe of Scarborough, to which he was ſent, thereby ſo much injured and weakened the tone of his bowels, that he fell into an aſcites ſoon after his return.

rough

rough fine and in pretty good quantity—in the waters at Bath of a peculiar nature, fine, mild, and balſamic.

The only water of the kind that can ſtand in the leaſt degree of competition with that of Cheltenham, is the purging water at Scarborough. Its neutral ſalt, however, does not appear, from the accounts given, to be ſo pure, mild, and fine taſted. It is full indeed, as that is, of air compreſſed in an expanſive ſtate, ariſing from the mixture or more ſimple motion and attenuation of its parts; but its chalybeate and ſulphureous ſeem not to be of ſo ſubtle a nature.

It is undoubtedly uſeful in the ſame diſorders as that at Cheltenham; and aided and aſſiſted by one of the ſame kind near it, which has the ſaline qualities in a leſs proportion, it has been very properly adviſed in the reſtoration of vitiated digeſtions and ſtomachs injured by intemperance: being uſeful in thoſe reſpects in the north, as Cheltenham and Bath are in the weſt. However, it is by no means to be ſet upon a level, in all reſpects, with a water of ſuch wonderful powers and efficacy as that of Cheltenham.

*The Nature of the Cheltenham Water, and its Effects, compared with thoſe of ſome Mineral Waters of a different Claſs; and its extraordinary Uſe under the preſent reigning peſtilential Conſtitution.*

BEFORE any compariſon can be made between theſe, it will be neceſſary to ſay ſomething of the nature of Bath, Buxton, and Briſtol waters. But before this is done, give me leave to obſerve, that there are, and always have been, a ſet of men in the world ſo void of faith, that they are not eaſily to be perſuaded to believe any thing that is not groſs enough to be an object of ſight; that they can at leaſt ſee with their eyes, if not handle with their hands. Nay, ſome have been ſo abſurdly ignorant, and ſo utterly deſtitute of true phyſical knowledge, as to think theſe fine natural productions of the Creator, mineral waters, unwholeſome and pernicious. From ſuch cauſes, joined with the matter of pride, and a variety of intereſts, from this fund, I ſay, of ignorance, nonſenſe, and obſtinate error, have aroſe the wrong-headed notions of the nature of the nervous ſyſtem, the arguments againſt the exiſtence of the animal ſpirits, and, in regard of a matter related to our preſent ſubject, the diſputes concerning the exiſtence of a ſulphureous principle in Bath waters. For, without proceeding by that wiſe method in obtaining knowledge, of going on from things known to thoſe which are unknown; without

without the force of a penetrating genius, guided by judgment, and urged on by the true love of knowledge, it is impoſſible for us to dive into the great arcana of nature; to gain even a diſtant view of the nature of ſome of her fine preparations; but we muſt infallibly remain totally ignorant of them, and of many other things neceſſary to our well being in the world, if not our very ſubſiſtance in it, from the day of our birth, to the time we go out of it. I diſapprove not of indulging doubt to a certain degree; but where ſcepticiſm and infidelity reign, ſcience will never be able to make any conſiderable progreſs.

I need only mention the diſputes about this ſulphureous principle, to prove the deficiencies of analytical methods in reſolving theſe doubts. And though its exiſtence in Bath waters has been now pretty well determined by a chemical proceſs; yet this knowledge might as well have been taken from the ſmell of the Bath mud; and, at laſt, we are to derive our notions of the nature, ſubtlety, mildneſs, and purity of this fine principle from neither, but from the effects of the water.

In regard of the matter of philoſophy—when I conſider that from experiments themſelves, it appears there certainly is a natural acid of the vitriolic kind in the air, and one of the ſame kind moving about in the cavities of the earth, where the air penetrates and circulates, which is concerned with alkaline principles and abſorbent earths in forming the neutral ſalt in mineral ſprings; and that there is alſo a ſubtle matter of a warmer kind, or *principium*

*pium inflammabile*, which pervades not only natural but animal bodies, is a great band or principle of union in them, and the animating, as the air is the great preſerving principle, which being united with the vitriolic acid, will produce ſulphur; when I conſider theſe things, I cannot be of opinion with *Hoffman*, that ſulphur is ſo ſeldom to be met with in mineral waters as he imagined.

It is true, theſe ſulphureous qualities, or principles, by reaſon of their extreme ſubtlety and fineneſs, and their varied nature ariſing from the predominance of the acid in ſome waters, and the *principium inflammabile* in others, which latter is probably the caſe with thoſe at Bath, are often ſo far from openly ſhewing themſelves in the water, and exhibiting a compleat ſulphur, or flowers of ſulphur, that they do not even diſcover themſelves by the ſmell; and yet they exiſt after a more powerful manner than if they did. And indeed we cannot well account for their extraordinary balſamic and reſtorative virtues, nor even for their natural warmth, without admitting a principle of this kind.

Beſides theſe reaſons for ſulphureous properties in waters, it is well known there are ſuch kinds of damps in the earth, which impart their qualities to waters, and which are ſo fatal to miners when they gather and ſtagnate in its cavities, and prevent the due circulation of the air; overcoming thus its pure, active, and naturally preſervative powers, and bringing on ſuffocation.

Such kinds of vapours alſo, not in due circulation, nor properly tempered with air, when they become greatly rarefied, and have not a proper vent, are the cauſe of earthquakes. For ſtagnation is the principle of deſtruction, or death, in the natural world, as well as in the animal. And when the particles of light and powers of heat, which are univerſally ſpread abroad, and penetrate all bodies, ſhall be out of circulation, not tempered by air, and, by perpetual addition, and increaſed force, ſhall become prevalent and predominant, they will undoubtedly unite, take fire, and produce the deſtruction of this ſolar ſyſtem; a matter which, by faith, we are taught will certainly at length take place.

Now, all theſe things conſidered, and the natural warmth of the Bath waters, which does not bear even the leaſt reſemblance to the heat of actual fire, either in its temper or effects, but is more like a fine animal warmth, it is probable their ſulphureous qualities in their preparation, the confinement they are under, with the abſence of any great quantity of matter of a ſaline nature, as is peculiarly the caſe with ſuch kinds of waters, are the cauſe of it. Even common ſprings are not deſtitute, as I have already obſerved, of ſome degree of natural warmth; eſpecially when the coldneſs of the air prevents the ſudden evaporation of ſuch rarified parts. And even warm mineral waters themſelves are ſaid to be more ſo in the winter ſeaſon.

But theſe things will probably, in a good meaſure, ever remain among the great arcana of nature. It is

moſt certain, however, that the warmth of moſt of them, at leaſt, from its natural feel, and powerful effects, is not occaſioned by ſubterraneous fire, as hath been groſsly imagined by ſome, who weakly ground their opinion upon their being found in vallies, as being nearer to the ſuppoſed central heat;—a notion in theſe days indeed fully exploded. The Romans, on the contrary, ſeem to have had ſuch plain ſentiments on theſe matters, they they thought the warmth of Bath waters chiefly owing to the action of the ſun, calling them *aquæ Solis*. If we conſider, that all the warm mineral ſprings in England are ſurrounded by, or have hills near them, full of ſtone quarries of different kinds, or have rocks of ſpar in their neighbourhood, we ſhall have reaſon to conclude, that their various contents, with ſome other natural cauſes, are the occaſion of their natural warmth, and the different degrees of it; of their various properties, and that in the moſt ſimple manner. *Tales enim ſunt aquæ qualis terra per quam fluunt*; as *Pliny* has long ago juſtly obſerved.

As the warmth in Bath waters appears to be occaſioned by their ſulphureous qualities from the *Pyrites*, or ſome ſtone that partakes of it, ſo it is reaſonable to believe the more temperate one in theſe at Buxton certainly ariſes in their paſſage through the hills of natural limeſtone that abound in Derbyſhire; and from their imbibing the hot dry fumes emitted from it; whether or not increaſed by the motion and attrition of their parts. In this I agree with that great naturaliſt *Dr. Liſter*; and

indeed this their very nature ſhews. For ſome exquiſitely ſubtle particles of a calcareous abſorbent earth, are intimately mixed with them; which make them heating and binding. And they are full of an elaſtic rarified air, which being confined and compreſſed in its warm expanſive ſtate, is their natural ſpirit, whereby they are ſo powerful in opening the veſſels, and promoting perſpiration, both in internal and external uſe. As an elaſtic air of a greater warmth, under the ſame compreſſion, joined to a chalybeate principle taken up, united with it, and ſtill farther attenuated by motion and inteſtine action, is the ſpirit mineral of the Bath waters. The quantity of ſaline matter neutral*, or marine, in either water, is but ſmall, eſpecially in the former.

As to Briſtol waters, their natural warmth ariſes probably, after ſome ſuch manner, in the ſparry rocks near that city; and is ſtill more temperate and mild, as they are quite different in nature. For though there is ſome neutral ſalt in this water, and its warmth is aperient to the veſſels, as well as that of Buxton, or thoſe of Bath, though in a milder way of action; yet it is likewiſe endued with a peculiar cooling, repreſſive, and bracing nature, diſtinguiſhable even in the taſte, and which is thought to reſide in a fine vitriolic ſpirit. This makes it diſpoſed to reſtrain inordinate evacuations; and, with its purity, is probably the reaſon why it will bear carrying into any part of the world without fermenting, and

* Liſter calls this neutral ſalt, and that in Scarborough waters, calcareous nitre.

preſerve

preſerve that natural quality in all climates. But from this cooling and reſtringent nature, it is apt to confine the bowels, as well as that of Buxton; and when improperly drank, to produce obſtructions in them: And as to Bath waters. though endued with ſaline qualities, and I doubt not, alſo ſome ſulphureous principles of a peculiar nature, yet they are not apt to paſs off by them.

To come now to the great object of this enquiry, the natural powers and uſes of theſe waters; eſpecially in the preſent peſtilential conſtitution, and the diſorders to which the body is ſubject under its influence.

In regard of the Bath waters, we are evidently to look for their peculiar powers in their watry particles, ſaline properties, ſulphureous principles, chalybeate ſpirit, and natural warmth. Theſe we accordingly find active in diluting, viſcid, and acrid humours, in reſtoring the digeſtive faculties; in opening the veſſels, rarefying, attenuating, purifying, and cleanſing the blood, and in diſcharging vicious humours thus prepared by the ſkin and kidneys; and when the conſtitution is thus relieved from a load of impure juices, in ſtrengthening and confirming the tone of the veſſels; in reſtoring natural motion, circulation, and warmth; and perhaps by a balſamic quality reſident in their ſulphureous particles, repairing the decays of nature, and the injuries, general or particular, which intemperance and time have brought upon the ſyſtem; and thus invigorating it, and reſtoring at leaſt, in ſome meaſure, its proper powers.

Hence we find them eminently uſeful and excellent in diſorders of the ſtomach and bowels, and in diſperſing humours collected in them; in colicks, eſpecially of the nervous and ſpaſmodic kind; and therefore in thoſe which ariſe from an undue contraction of the veſſels, incident to painters and others who work among the fumes of lead, and in the diſorders of the other extreme, namely, in fluxes of the belly. They are alſo admirable in throwing out the gout, when the body is, or is put into a proper condition for it, eſpecially when aided and aſſiſted by bathing; in long caſes, where the nerves are greatly weakened, and nature exhauſted and worn out, when the veſſels are not oppreſſed, foul humours want to be attenuated and diſcharged, and the ſtrength of the body reſtored: in diſcuſſing tumours, and reſtoring contracted limbs.

They are alſo peculiarly ſuperior in nature to the other mineral waters of England in all caſes of paralytic tremor, and nervous debility; in opening the veſſels, promoting freedom of circulation, and reſtoring the powers of motion in the fibres, when decayed and almoſt loſt by ſuch a relaxed, yet at the ſame time compact or rigid ſtate of them, as happens in perſons of advanced years; in caſes of barreneſs, &c.

But it unfortunately happens, as is but too common with the beſt things when miſapplied, that, under notions of their ſtrengthening nature and reſtoring powers, they are often very improperly adviſed in abortions in women who are of weak conſtitutions and delicate habits. For

by

by rendering them more diſpoſed to breed children, than the natural weakneſs of their conſtitutions will properly admit, they never fail to promote the miſchief they are intended to prevent. Hence frequent miſcarriages, bringing on at leaſt a gradual, if not ſudden decline, ending at length in fatal conſequences.

Theſe waters are alſo frequently miſapplied in caſes when the blood is tenacious, and the habit loaded; eſpecially where the peccant humours, when rarefied, by reaſon of their natural diſpoſition, or the peculiar weakneſs of the brain or lungs are apt to fall upon either. Hence apoplexies and paralytic affections from oppreſſion and obſtruction in the former, and hæmorrhages in the latter. The foul humours, when thus ſuddenly and unduly rarefied, will ſometimes alſo find a vent by the rupture of veſſels in other parts *, or elſe a fever, attended with violent and dangerous efforts, will come on.

As Bath waters greatly rarefy the blood, and promote the ſecretions by the ſkin and kidneys, the excellence of thoſe at Briſtol, on the contrary, conſiſts chiefly in their diluting and cleanſing qualities, cooling and repreſſive powers; in waſhing the blood when it is acrid, and bracing the veſſels when they are weak, and the finer juices apt to fly off too faſt, or even the groſſer to be too haſtily diſcharged. Hence they are uſeful in hectic

* This happened to a gentleman who unadviſedly drank theſe waters in ſuch a ſtate, and it nearly coſt him his life; the diſcharge from the bowels, or internal hæmorrhoids, was ſo profuſe.

fevers, in conſumptions in an advanced ſtate, ſpittings of blood, and impoſtumes internal and external, attended with decay and decline; in the diabetes, in diſeaſes of the kidneys, gravel, bloody urine, obſtinate gleets, &c. But if the humours are tenacious and groſs, and not yet arrived at ſuch a thin, acrid, and diſſolved ſtate, even theſe uaturally cooling waters, by confining them, will produce fevers, pleuriſies, obſtructions, and inflammations of the lungs, in conſumptive habits *, inſtead of relieving nature by the attenuation and diſcharge of them, which they are, in fact, unfit for, and therefore unable to perform.

We have hence proof abundant, that without good knowledge of the original cauſes of diſeaſes both in the ſolids and fluids, and of the various conſtitutions of the air, and the ſtate of the bodies under them, it is impoſſible to preſcribe mineral waters with judgment; a matter I have already ſo much inſiſted on. This, however, is leſs the caſe with the Cheltenham water, and that ſomewhat ſimilar to it at Scarborough, though they have powerful chalybeate and alſo ſulphureous qualities. Since, though they attenuate and rarefy the blood, they act by the bowels, as well as by the kidneys and glands of the ſkin; therefore ſuch ill effects are not to be attributed to their uſe. But their ſafety and excellence are more than ordinarily conſpicuous, as I have already ob-

* This happened to a gentleman in a conſumption, who was ſent to theſe waters for relief, and died there.

ſerved,

ſerved, in peſtilential conſtitutions like the preſent; when the more powerfully rarefying powers of Bath, and even Buxton waters upon the blood, at ſuch times abounding with foul, tenacious, and compacted humours, heated, and at the ſame time confined, by long continuance of hot and dry, or cold weather, or their irregular ſtate, and the frequent ſudden tranſitions, often many times in a day, from the one to the other, never failing preparatives to and attendants on ſuch ſtates, render their action unfriendly to the body under ſuch circumſtances; and, by reaſon alſo of their bracing powers, not only apt to bring on fevers, but, by the confinement they bring upon the bowels, to render thoſe fevers fatal. For the invincibly tenacious and corrupt humours being neceſſarily determined that way for their diſcharge, with the paſſages locked up, and no remaining outlet, it is but too evident, that nature, having no reſource left, muſt ſink under the diſorder*.

The Cheltenham water, we well know, acts in a quite different manner, and never fails, by the diſcharges of the bowels, to give proper relief to the body, before its attenuant powers gain too much ground, and yet forward in their action; and therefore, as not being concerned in producing ſuch unfriendly effects, is not liable to

* A gentleman of a groſs habit underwent theſe ill effects, and their fatal conſequences, in the year 1783, being attacked under ſuch circumſtances, with the peſtilential fever CUM DIFFICULTATE INTESTINORUM, epidemic in that ſeaſon.

ſuch

ſuch imputations. And from a due inſight into theſe matters it was that I directed the uſe of ſuch waters, both by way of aſſiſtance and prevention, as early as the year 1778, in a Treatiſe on the peſtilential conſtitution of that ſeaſon; as well as intimated the great neceſſity of paying proper attention to the ſtate of the bowels, and the uſe of gentle aperient medicines, in the ſcarlet fever and ſore throat, and other peſtilential fevers brought on by it.

*That Cheltenham Water is not to be effectually imitated, nor when decompounded, properly reſtored.*

THERE is no man who thinks, or at leaſt as he ought, who is not ſenſible, that the great works of the Creator ſtand eminently diſtinguiſhed from, and hold no proportion with the works of art. And it is an argument that certainly is, and without much conſideration, appears to be, of itſelf alone, ſufficient to prove the inſufficiency of analytical methods in diſcovering the nature of mineral ſprings; and that they are not to be imitated, nor when decompounded, reſtored to their natural, pure, mild, powerful, ſimple, and original ſtate. Yet chemiſts are ever talking of theſe things, and pretending alſo to imitate natural baths; though it is the ſtrongeſt proof that can be given of the impropriety of their ſentiments, in general, about them; and of the inadequate nature of the ideas they form, and the notions they entertain.

Even *Hoffman* himſelf, though he is in general allowed to have wrote the beſt upon this ſubject; yet, as a chemiſt, he did not wholly eſcape being infected with this wrong notion. For let any man take only common ſpring water, and who ſhall take upon him to reſtore to it when grown flat and vapid, the fine, pure, cooling, briſk, temperate, ſimple, natural, and original taſte it poſſeſſes at the ſpring-head? Now, if this be the caſe with common ſpring water, what muſt it be with mineral ſprings? which, beſides the excellencies of common

ſprings,

ſprings, have many other extraordinary qualities in their compoſition.

I doubt not but the mineral ſpirit in Cheltenham water may be renewed when loſt, and its parts in ſome meaſure united and raiſed, when its motion is become languid, or it is grown wholly inactive and dead, and the ocreous parts ſunk, by the addition of artificial fixed air; or imitated, when the chalybeate parts are wholly loſt, by the addition of that and iron. But all this proves nothing, till it can be alſo proved, that the water poſſeſſes the ſame pure natural taſte, mild and temperate, yet powerful qualities, ſimple and original nature, it was firſt endued with; none of which, I am fully ſatisfied, it is in the power of all the art in the world to give. So neceſſary to the attainment of knowledge in any thing is true ſimplicity of thought, and the taking care we do not get beyond our ſubject. Beſides, ſuppoſing the mineral ſpirit to be as naturally and properly raiſed, as in the water freſh from the ſpring, who is to ſupply its volatile ſulphureous principles? which, by reaſon of their ſubtle and balſamic nature, and the ſhare they have in meliorating or rendering mild and perfect the whole, as well as in regard of their own fine activity, are ſome of the beſt parts of the compoſition.

If a perſon ſhould pretend to imitate well cyder, wine, or any other noble liquor, which is indeed but too common a matter in theſe days, at leaſt with reſpect to the latter, and to equal any one, or all the peculiar ſorts in point of ſimple uniform taſte, flavour, goodneſs, would not

not even an indifferent judge detect the fallacy? Suppoſe again we ſhould attempt to imitate the fine pure taſte of Briſtol water, the ſpirit of thoſe at Bath, the mild natural warmth of the former, the more powerful one of the latter in its various degrees, or the temperate ſtate thereof in the Buxton waters, and which are in a ſtate of mediocrity between both; to endue, I ſay, theſe ſeveral compoſitions with a ſubtle ſpirit and natural warmth, and render thoſe imitating the two latter as fit for the uſe of warm bathing, without producing great relaxation and enfeebling the body*, ſhould we not deſerve ridicule?

Now, I have the happineſs fully to underſtand, that Cheltenham water is of as fine a nature, and poſſeſſes qualities as excellent, in regard of the climate of Britain, and the diſeaſes to which, by reaſon of a groſſer food, and conſequent diſpoſition to a fizy blood, Britiſh conſtitutions are ſubject, as any mineral ſpring yet known in the world does in reſpect of the climate it is in, and the conſtitutions and diſeaſes of the reſpective inhabitants. In fact, though a cold water, it poſſeſſes all the fine ſpirit and native excellence of the hot ones, and in as eminent a degree, except their warmth. I am therefore called upon in a peculiar manner, for many weighty reaſons, to reſiſt any attempts to inculcate a notion, that it may be well reſtored, and drank with good effects any where,

* Artificial warm baths are ſeldom proper, except in fevers, and are chiefly uſeful in inflammatory caſes, and a conſtitution of the air that ſupports the ſtrength of the body.

in general, but on the ſpot; or that Bath waters, or any other water, except the purging one at Scarborough, may well ſupply its place. Since an attempt of this kind, ſhould it be poſſible for it to ſucceed, is the ſureſt way to bring it and its good effects, now it has riſen, as it were, out of its own ruin again into diſrepute, which would be no ſmall diſadvantage in general to the whole nation.

If people cannot afford, or do not chuſe, to attend upon the ſpot, let them buy it at the water ſhops, or ſend to Cheltenham for it. It may anſwer in ſome meaſure in caſes where the conſtitution is ſtrong, and therefore can better diſpenſe with the want of the action of its fine ſpirit; and in thoſe which chiefly ſtand in need of its operation by the bowels; but can neither be grateful to the taſte, ſtrengthening to the ſtomach, nor poſſeſs many of thoſe excellent qualities, which have been principally concerned in raiſing its character, making it deſervedly had in eſteem, and at preſent ſo much reſorted to.

# THE CONCLUSION.

I KNOW there are many who think, that not only conſiderable diſcoveries have been made in the nature of mineral waters, but alſo that phyſic in general has been much improved, in the very age we live. On the contrary, my acquaintance with the preſent general ſtate of knowledge in theſe things has made me, with reaſon, entertain quite different notions, as I have already ſhewn. In fact, concerning mineral waters, in particular, I am ſo old faſhioned to think, that their uſes, and, notwithſtanding ſome improvements, even their nature, in many reſpects, were much better known in general, in the laſt, and even ſome preceding generations, than the preſent. And as to phyſic in general, on which the proper direction and uſe of mineral waters depends, a better obſerver of nature, and conſequently practitioner in that art, aroſe in its very infancy, than has appeared in later times. Unleſs then men are determined to let this world paſs before it is done, it is highly proper they ſhould ſet in good earneſt about, and follow up the work of obſervation in all its branches; that they might be able to complete by reaſon, what is neceſſary to bring the art to its due perfection. For otherwiſe, and I ſpeak from a clear inſight into the ſubject

ject of which I treat, gained by obſervation, reaſon, and experience themſelves, without this ſuperior knowledge, I ſay, the preſent, or any future, ſtate of it in mineral waters, how advanced ſoever, ſupported by mere practical rules, will be found utterly defective, as it was before, and fall of courſe; and all notions of extending their uſe, like the idle dreams of the ignorant, vaniſh into nothing.

Thus it is, and ever will be, when the right method of ſtudying any ſcience is perverted, and very imperfect notions are the guide: and when, inſtead of nouriſhing and deriving ſap from the root, the branches are only cultivated. For any improvements in chemiſtry, which has gained an unnatural aſcendency, and taken the lead in the preſent times, will be of little uſe, while partial opinions prevail, or general methods only are followed, and the body of the ſcience is neglected; when incapacity diſqualifies ſome, and renders them unable to obtain, and indolence, or too great attention to other things, hinders others from ſeeking after that rational, fundamental, and better knowledge, which alone can inſpire with vigour, and yield due ſupplies to the whole: and what is ſtill worſe, when pride will not receive it when found, except it comes from a quarter that ſhe likes. Will the parade of learning anſwer, or ſome of the inferior parts of knowledge, while the more ſubſtantial are wanting? What then, under ſuch circumſtances, can chemiſtry do? Since neither that, nor botany, nor even the natural knowledge of mineral waters themſelves, are

to

to be placed in any higher rank of order than that of good ſervants to phyſic, when under the proper direction of maſters in that art.

As to my own knowledge of the nature of mineral ſprings, imperfect as it is, the foundation of it was laid in a few hints only, that were given me when young. Theſe were afterwards improved by the moſt ſimple and natural methods of diſcovering their apparent qualities, and confirmed by obſervation and experience of their effects; joined with true notions of diſeaſe as it really exiſts in the body, as hereditary and acquired, and increaſed in its malign nature, more or leſs, by the influence of the various conſtitutions of the air, by intemperance, age, &c. already all ſo much inſiſted on. In regard of our preſent ſubject then—when we have gained a competent knowledge of all theſe things, and proceeded thus far; if we are diſpoſed to go on ſtill farther in the ſtudy of mineral ſprings, after having read their natural hiſtory, and the opinions the greateſt men have entertained of them, and joined to this the experience of all ages, we muſt not only open our natural eyes, but thoſe of our minds alſo; return back to ſimplicity itſelf, and look into the great natural ſyſtem, the works and deſigns of Providence; and withal become true devotees to knowledge, come from what quarter ſhe will. For otherwiſe we ſhall never become adepts in ſcience of any kind. By theſe means we may perhaps obtain true general notions of theſe matters, where ocular inſpection and demonſtrative knowledge are denied.

Experiments alſo may help us; but we are not to ſit down contented with them. They have deceived others, and may alſo deceive us: and at moſt, with all the natural knowledge alſo heretofore had, are incapable of making us able to acquire a proper knowledge of the nature of mineral ſprings, and notions competent of their uſe. And indeed, if we proceed not in a manner ſomewhat different, what good reaſon can we have to ſuppoſe, that we ſhall be able to make much farther advances than they who have preceded us in the ſame track?

As to ſceptics in natural philoſophy, &c. whoſe eyes are too much fixed on groſs objects; who cut themſelves off from knowledge, and are never able to follow her in her high flights, nor trace her in her intricate ways, becauſe they will not believe any thing without ocular inſpection, or groſs proof; who are ſatisfied with nothing but experiments, ſtick cloſe to this knowledge alone, and will hardly take up with any thing that they think is not to be deduced from it, though theſe very experiments themſelves, like empyric knowledge in phyſic, often deceive the unwary minds of thoſe who truſt in them; as to them, I ſay, they muſt be content to take up with ſuch knowledge as is to be thereby gotten, which no one who is properly acquainted with the matter will pretend to ſay has ever been tolerably perfect.

As I have always freely declared my thoughts of the Cheltenham water, ſo, from being ſenſible that I owe much to my fellow-creatures, for the great benefits I myſelf have received this way at the hands of Providence,

 I heartily

I heartily wiſh the preſent more full communication of them may be attended with good effects. And as I have not kept back my knowledge and experience in theſe matters, for my own mere uſe, convenience, or advantage, but given my directions as occaſions preſented themſelves, I ſhall therefore, with a proper degree of confidence, becoming the rectitude of my intentions, in contributing to ſupport for many years, both by my practice and earneſt recommendation, the then declining credit of this mineral ſpring, now take leave of each of my readers with the following wiſh:

VALE ET FRUERE.

FINIS.

*Published by the same Author.*

The Nature of Inoculation explained.

A Treatise on the Putrid Constitution of 1777, and the preceding Years; and on the Pestilential one of 1778.

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